CONTENTS

APRIL, 1925

Honey Markets		208-209
Editorials		213-215
Cardinal Points in Queen-rearing	Allen Latham	216-218
Races of Bees	Phillip J. Baldensperger	218-220
Both Ends of the Package Business	Jay Smith	220-222
Central Apiary Plant	Morley Pettit	222-224
Preparing for the Harvest	J. E. Crane	225-226
Pollination of Orchard Fruits	Glenn W. Herrick	227-230
Bees Destroyed by Dusting	H. M. Myers	230-231
Bulk Comb-honey Production	Eugene Holloway	232-233
Surplus Honey from Tulip Trees	R. Broyles	233
Equalizing Colonies in Spring	I. W. Cameron	233-234
Protection for Bees in Spring	A. N. Clark	234
Siftings	J. E. Crane	235
North, East, West and South		236-240
Heads of Grain from Different Fields		241-242
Talks to Beginners	Geo. S. Demuth	243-244
Just News		245
Gleaned by Asking	Geo. S. Demuth	246-247
A. I. Root's Story of His Life		248-257
Sour Honey Department		258-265

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Geo. S. Demuth and E. R. Root, Editors — H. H. Root, Assistant Editor — H. G. Rowe, M'n'g Editor

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Root's Goods at factory prices with *WEBER'S* service. :: Send us a list of your wants and we will quote prices that will save you money.

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WHEN you get *Root Quality Bee Supplies* from the greatest shipping center in America, you get *satisfaction.* You get a superior grade of goods in *quality* and *workmanship.* Twenty-seven railroads mean quickest service for you. Write for our new 1925 catalog. Let us quote you on your wants.

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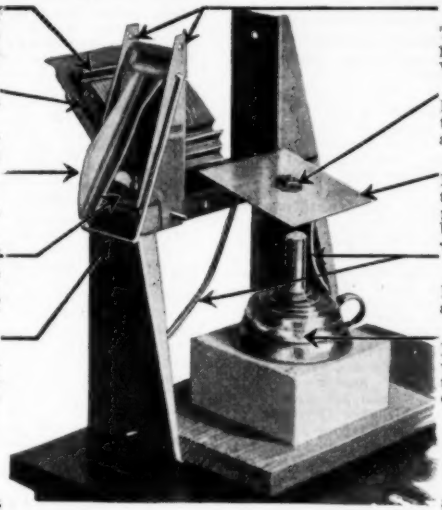
T-shaped Form Block
The sharp edge of hot plate slides under T-tin when cutting off foundation.
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Holds sections securely on the block while it is being reversed.
Hand Lever
Which quickly fastens dovetails of sections.
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Permits lever post to be moved backward and forward for sections of different sizes.
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May be swung over opposite post when fastening dovetails if desired.
Adjustable Lever
These holes in frame permit raising for use with taller sections.
Hot Plate Nut
Permits hot plate to be titlted at just the right angle.
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Melts edges of foundation, then cuts large piece off to make small bottom starter.
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Permit it to move to and from the form block.
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Hot plate tilts over lamp when not in use permitting surplus wax to run off back edge.

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It folds comb honey sections and fastens top and bottom foundation starters at one handling at a great saving in time and money.

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Delivers Right Side Up. The WOODMAN Section Fixer is the only machine from which the section comes away right side up, with a large starter hanging down. They do not become loosened in reversing as with other machines.

More Money for Your Honey. Because with top and bottom starters you are assured of straight combs, well attached to all four sides—a requirement to grade fancy. The hot plate fastens both top and bottom starters securely.

Easy to Use. Since you are always handling large pieces of foundation, the WOODMAN Fixer is much more easily used than any other machine. By ordinary means, only an expert can set the small starter at all, but with the WOODMAN this is accomplished very easily and quickly.

Hundreds Solds. The WOODMAN Fixer is the most successful and popular machine on the market. Every buyer is enthusiastic. Adjusts quickly to handle different size sections. If you have but 10 swarms, you can not afford to do without it.

A postal brings full information and price. Our complete catalog of Beekeepers' Supplies and accessories free for the asking. Write for it.

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Sole Manufacturers.
204 Scribner Avenue, N. W.
Grand Rapids, Michigan.

Price with lamp, $5.70.
Mailing weight, 5 pounds.
Postage extra.

For sale by all G. B. Lewis Co. and Dadant & Sons agencies. Also sold by many others in this and foreign countries.

Woodman's Section Fixer

HONEY MARKETS

U. S. GOVERNMENT REPORT
Information from Producing Areas (first half of March)

CALIFORNIA POINTS: Southern California—Although light early March rains improved conditions in some areas, in general deficient rainfall for the third successive year makes crop prospects poor from sage and other wild plants. Manzanita bore well, and buckthorn and wild mountain lilac are now yielding heavily. While bees with ample stores are building up rapidly, many colonies are in bad condition due to neglect, shortage of stores, and disease. One estimate is that one-third to one-half of the bees will be lost before orange bloom opens, the first of April. Much call reported for locally-produced honey from the local trade. Beeswax is in good demand at 26-30c per lb. Northern California—The weather has been warm, and honey plants have been thriving. Manzanita is yielding nicely, helping queen-rearing, and supplying pound package men with plenty of bees. Almond nectar is still coming in and bees will shortly move to prune orchards. Heavy flow on from mustard. Good crop looked for from thistles. American foul brood reported to some extent in most apiaries. Amber thistle honey has sold in ton lots at 9½c per lb.; dark mixed, 7¾c per lb. Beeswax, 25c per lb. in cash, 26c in trade.

PACIFIC NORTHWEST—Bees are working on willows, maple and cottonwood, and brood-rearing is well under way. Ample snow reported in the hills. Prospects good for a heavy fruit bloom. No. 1 white comb reported sold at $4.00-4.50 per case; one small car extracted sold at 8¼c per lb. Beeswax, 25c per lb. cash; 26c per lb. in trade.

INTERMOUNTAIN REGION—Bees have apparently wintered better than expected. They are flying almost every day, and present indications are that winter losses will be light. Brood-rearing has started and consumption of stores is heavy. Some colonies are already short of stores. Prospects for irrigation water are uncertain in some sections. The market for extracted honey has been generally dull during the past two weeks, with quite a few scattered cars still unsold. Three cars extracted white sweet clover and alfalfa sold at 9c per lb. 1 car at 9¼c per lb. Some are reported holding for 10-10½c per lb. Demand improving slightly for comb, and one car lot white sweet clover and alfalfa reported sold at $4.60 per case for fancy, and $4.20 for choice. Beeswax has brought the beekeeper 25-30c, some low as 22c per lb.

NORTHEASTERN STATES—Bees had several flights during early March, although it is still cold in northern part of section. Bees in cellars uneasy. Clover is starting nicely. Honey nearly exhausted. Few sales extracted white clover; ton lots, 10½-12c per lb.; 60s, 12-13c; small pails, 14-15c per lb.; buckwheat, large lots, 10c; small pails, 11c per lb.; comb, white clover, fancy and No. 1, $4.35-5.00; No. 2, $4.00 per case; fancy buckwheat, $4.50 per case. Beeswax has advanced in price, yellow selling at 28-35c, some 40-50c per lb.

TEXAS—Dry weather makes prospects rather unfavorable for spring crop of honey except in northwest portion of state. Little horsemint honey is looked for. Bees are getting considerable pollen and some nectar from various sources, and are generally building up rapidly. Little honey available. Few sales light amber extracted at 10-12c per lb., few higher. Beeswax, 25-30c, mostly 30c per lb.

EAST CENTRAL AND NORTH CENTRAL STATES—In extreme northern portion bees have had several flight days; further south they have flown frequently. Clover is yet in good condition, although in many cases not covered with snow and may suffer from continual freezing and thawing. Little honey left in producers' hands, and prices in some sections show slight advance. Ton lots white clover moved at 10½-12½c per lb; 60s, 15c; small pails, 18c per lb.; No. 1 white comb, wide range, $4.00-5.00; few, $5.75; No. 2, $4.00 per case. Beeswax prices have advanced; one lot light yellow sold at 38c per lb.

PLAINS AREA—Bees are flying and pollen is coming in. Winter losses seem light where bees were properly packed, but some losses of 50-75% reported. Honey is moving slowly at steady prices. Few beekeepers have any left. The beeswax market is strong at advanced prices. Sales reported at 30c per lb. for average wax; 33-35c per lb. for yellow.

SOUTHEASTERN STATES—The outlook for a honey crop in Louisiana is the best in years. Most hives have six to eight solid frames of brood, and some have more. Nectar is coming in from willow and white clover in the southern part of the state. In Georgia brood-rearing was retarded by cold weather the first week in March, but bees are again bringing in pollen and nectar. Mississippi reports plenty of sealed brood. The outlook for the package business is the best in years, and prospects are excellent for white and sweet clover. The flow from clover should be normal in Alabama. Oranges are late in blooming in Florida, where bees are working on pennyroyal. Few sales. Barrels light amber extracted have sold at 8-10c per lb.; amber, 8c; small pails, amber and light amber, 12-12½c per lb.

H. C. TAYLOR, Chief of Bureau.

Special Foreign Quotations

LIVERPOOL.—The honey market remains firm, although very little business is passing. Our prices remain much the same as we last quoted. The American exchange has not varied very much from our last report, and therefore the price remains 12¾c per lb. There is a fair market for beeswax and there has been a small advance on our last prices. We make the value to be 39c per lb. Taylor & Co.

Liverpool, Eng., March 5.

From Producers' Associations

Prospects for a honey crop in northern Colorado are not the best. We have had an unusual shortage of moisture, and in consequence the sweet clover and alfalfa are likely not to produce as much bloom as it might. Furthermore, north of Denver, as well as south of Denver, temperatures have been very low for a considerable period, and there is a heavy loss of bees.

Marketing conditions on honey have improved. There are no large lots of extracted honey in the hands of producers in this territory that we know of, and the amount of comb honey has also been decreased to some extent, so it now looks as though it would be all put into consumption before the new crop comes on. The Colorado Honey Producers' Assn..

Denver, Colo. F. Rauchfuss, Secy.

Our 1924 honey crop is within striking distance of becoming all sold, and we hope to have it all cleaned up by the first of June, when we shall be in good shape to handle a bumper 1925 crop. The market conditions during the past few months in Canada have been very fair. Western Canada particularly has been buying quite liberally, and we have marketed a good many carloads in British Columbia. The Ontario Honey Producers' Co-operative.

Toronto, Ont. A. G. Halstead, Gen. Mgr.

The A. I. Root Company's Report

Since our last report we have purchased 1853 pounds of white to water-white extracted clover honey from local points and in small lots at prices varying from 8c to 9½c per pound f. o. b. shipping point, according to the quality and the transportation costs. We also purchased one carload extracted sweet clover honey and two small lots, amounting to 1192 pounds, at 9c per pound, f. o. b. shipping point. We have purchased no comb honey, but handled one carload on consignment.

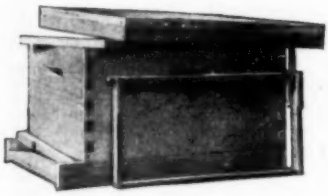
Report of Honey Producers

Early in March we sent the following questions to actual honey producers:

1. What per cent, if any, of the honey produced in your locality is still left in the hands of the producers?
2. At what prices have sales been made (if any) in your locality, in carload lots? (a) For extracted honey, per pound? (b) For comb honey, Fancy and No. 1, per case?
3. What are prices when sold to retailers in case lots in your locality? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case?
4. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per section?
5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid.
6. What is the per cent of winter loss of colonies, if any, to date in your locality?
7. What is the condition of the colonies at this time as compared with normal? Give answer in per cent.
8. What is your estimate of the condition of the honey plants for next season as compared with normal? Give answer in per cent.

State.	Reported by:	Pct. Crop Unsold.	In large lots. Ex.	Comb.	In small lots. Ex.	Comb.	Retail prices. Ex.	Comb.	Move. ment.	Winter Loss Pct.	Col. Con. Pct.	Plant Con. Pct.
Ala.	W. D. Achord	10					$.75		Fair	0	100	80
Ala.	J. M. Cutts	50					.80		Slow	½	100	100
Ala.	J. C. Dickman	0			$.80		1.00		Fair	10	100	100
Ark.	Jas. Johnson	5				$5.25		$.28		0	90	100
Ark.	J. V. Ormond	0								5	75	80
B.C.	W. J. Sheppard	40			1.00		1.25		Fair	0	100	100
Cal.	M. C. Richter	0					1.50		Fair	5	90	110
Cal.	Geo. Larinan						1.00		Fair		80	50
Cal.	M. H. Mendleson					6.25	1.15	.37	Fair		75	0
Cal.	L. L. Andrews	3	.14		1.00		1.00	.30	Fair	25	100	30
Cal.	M. A. Saylor	5			.75	4.50	1.00	.30	Fair	10	100	100
Col.	B. W. Hopper	0					.85	.25	Slow	3	100	100
Conn.	Allen Latham	8			1.00	6.50	1.25	.35	Fair	1	100	90
Conn.	A. W. Yates	2			1.00	7.00	1.25	.40	Slow	2	100	100
Fla.	C. C. Cook	0	.08		.80		1.00		Fair	5	100	100
Fla.	Harry Hewitt	0			.75		1.00		Fair	2	110	100
Fla.	F. E. Munson									5	100	100
Ga.	J. J. Wilder	0										
Ida.	J. E. Miller	0	.09½		.55	4.50	.80	.30	Fair	10	90	90
Ill.	C. F. Bender	0				6.00		.30	Slow	10	100	110
Ill.	A. L. Kildow	0					.85	.25	Slow		100	110
Ind.	Jay Smith	0					1.25	.30	Fair	10	100	125
Ind.	T. C. Johnson	25			.90	4.90	1.15	.25	Slow	5	100	100
Ind.	E. S. Miller	30			.90	5.75	1.15	.30	Slow	15	100	100
Ia.	W. S. Pangburn	10			.75	5.40	.95	.28	Slow	2	100	
Ia.	E. G. Brown	3			.75	4.80	1.15	.25	Fair		100	100
Ia.	F. Coverdale	0			.55	4.75		.27	Fair	2	100	100
Kan.	J. A. Nininger	5			.75	5.25	.95	.25	Fair	5	80	85
Ky.	P. C. Ward	0							Slow	2	90	95
La.	E. C. Davis	5	.08		.75		1.00	.35	Fair	0	100	100
Me.	O. B. Griffin	10			1.10	6.75	1.40	.35	Fair			80
Md.	S. G. Crocker, Jr.	10			.88	5.75	1.25	.35	Fair	5	100	90
Mass.	Dr. B. N. Gates	20						.42	Fair			
Mich.	Floyd Markham	5			.75		1.25		Slow	0	125	100
Mich.	Ira D. Bartlett	2			.75		1.00		Fair		100	100
Minn.	Francis Jager	10					1.15	.25	Slow	0	100	100
Mo.	J. H. Fisbeck	0							Slow	0	80	62
Mo.	J. M. Romberger			5.25	.75	6.00	1.00	.28	Fair	30	60	100
Nebr.	J. H. Wagner	10			.65		.90		Slow	4	100	110
N.J.	E. G. Carr								Slow	10	80	100
Nev.	E. G. Norton		.08¾						Slow	2	90	100
N.Y.	Geo. B. Howe				.70		1.00	.33	Rapid		90	90
N.Y.	Adams & Myers	15							Slow	0	100	100
N.Y.	F. W. Lesser	0					1.00	.30	Slow	2	100	90
N.Y.	R. B. Willson				.95		1.20	.30	Fair		95	90
N.C.	C. L. Sams	3			1.00	5.00	1.25	.30	Slow	8	100	100
N.C.	C. S. Baumgarner	0			1.00		1.25	.30	Slow	0	100	100
Ohio.	R. D. Hiatt	5			1.05	6.00	1.35	.35	Fair		85	80
Ohio.	J. F. Moore	0			.80	5.00	1.10	.30	Slow	5	80	90
Ohio.	F. Leininger		.11	5.50					Fair	2	90	90
Okla.	Jos. Heueisen	0					1.25	.35	Fair	6	80	100
Okla.	C. F. Stiles	5			.90	5.75	1.15	.35	Slow	0	90	70
Ore.	H. A. Scullen	50			.80		1.00	.25	Slow	1	100	
Pa.	D. C. Gilham	10			1.05	7.20	1.40	.40	Fair	0	90	95
Pa.	Harry Beaver	2			.95		.85		Slow	6	90	85
S.C.	E. S. Prevost				1.00	6.00			Fair	4	100	100
S.D.	L. A. Syverud	2	.10½		.65	4.50	.90	.25	Fair		75	100
Tenn.	J. M. Buchanan	0					1.25	.35	Slow	1	100	90
Texas.	T. A. Bowden	10			.80		1.05		Slow	2	100	75
Texas.	J. N. Mayes	0								2	75	75
Utah.	N. E. Miller	0										75
Utah.	M. A. Gill						.60	.25	Fair	5	100	80
Vt.	J. E. Crane	5			1.00	6.00	1.25	.35	Slow			100
Va.	T. C. Asher	0					1.25	.35	Fair	5	85	95
Va.	L. N. Gravely	0	.15	6.00	1.25	6.00	1.50	.35	Fair	0	70	85
Wash.	G. W. B. Saxton	40	.10½		.60		.70		Fair	3	100	100
W.Va.	T. K. Massie				1.15	6.00	1.40	.40	Slow	12	60	80
Wis.	N. E. Frances	10					.95	.25	Fair			75
Wis.	E. Hassinger	10			.80		1.00		Fair	0	100	100
Wis.	H. F. Wilson					5.75	1.15	.32		1	100	100
Wyo.	A. D. Brown	0	.08½							2	100	100

WEIGH THIS CAREFULLY

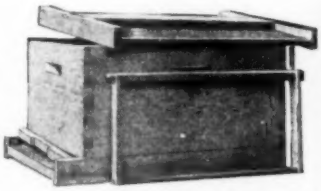


Metal Cover Hives
With Inner Covers

Quality in every inch has been our motto in building these hives. The cover is made of heavy white pine covered with heavy gauge galvanized iron—will last a life time. The body, and in fact all the lumber used in our hives, supers and frames is clear white soft pine. All parts are full thickness, lumber perfectly smooth and exact in fitting. See our guarantee. Hives include metal cover, inner cover, body, frames, bottom board, tin rabbet and nails. Write for catalog.

10 fr. size in lots of 5 - - - - - - - - - $2.89 each
8 fr. size in lots of 5 - - - - - - - - - 2.58 each

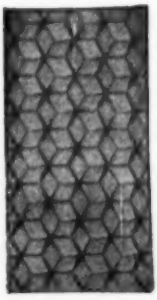
Excelsior Wood Cover Hives



These hives are exactly the same as the above, except the covers which are made of wood and do not use an inner cover. Direct sales without dealer's margin is the reason for these saving prices to you. Write for our 1925 catalog—Free.

10 fr. size in lots of 5 - - - - - - - - - $2.39 each
8 fr. size in lots of 5 - - - - - - - - - 2.19 each

Comb Foundation

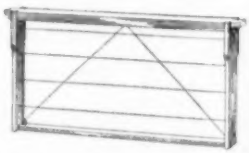


Medium Brood, 5-lb. Boxes - 65c per lb.

Our Thrifty comb foundation will save you money on purchase price and honey crop. Fresh foundation! That is the reason bees work on any brand of foundation first—Our production per day is 1,200 lbs. We make it fresh—you and your bees will like it. For 100% non-sagging combs, wire like the picture of the frame.

	Sheets to lb.	1 to 4 lbs.	5 to 24 lbs.	25 to 50 lbs.
Heavy Brood	6½	$0.67	$0.60	$0.55
Medium Brood	7½–8	.70	.65	.60
Light Brood	9–10	.72	.67	.63
Thin Surplus	28–30	.80	.70	.65
Ex. Thin Surplus	30–32	.82	.73	.68

FRAMES

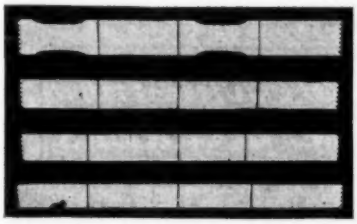


Hoffman Heavy Corner Cut	$5.45 per 100
Shallow Ext. Frames 5⅜ inches	4.35 per 100
Shallow Ext. Frames 4½ inches	4.35 per 100
Shallow Ext. Frames Heavy Top	5.00 per 100
Metal Spaced Frames	7.25 per 100

See Next Page

The Fred W. Muth Co. →

Sections

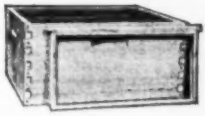


Clear Basswood—sharp knives—careful selection of grades and perfect packing make our quality stand out as one of the best. See our guarantee.

Size	100 Lot		500 Lot		1,000 Lot	
	No. 1	No. 2	No. 1	No. 2	No. 1	No. 2
4¼x1⅞ Sec	$1.30	$1.20	$5.85	$5.55	$11.35	$10.60
Plain Sizes	1.15	1.00	5.35	4.70	10.40	9.40

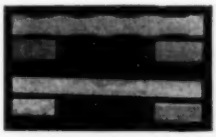
Hive Bodies

These are the same as one-story hive but without covers or bottom boards. Quality with saving is what you buy when you deal with Muth. Get our complete catalog—Free.



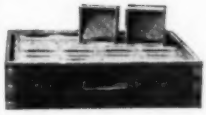
5–10-Frame Bodies with Frames.....$6.20 per crate
5– 8-Frame Bodies with Frames..... 5.65 per crate

Section Holders



	100 Lots
Scalloped Section Holder	$3.75
Plain for 4¼ x 1½	3.40
Plain for 4 x 5 x 1⅜	4.40
Fences, either size	5.80
Wood Separators	1.35

Comb Honey Supers



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Muth's Ideal Bee Veil

160,000 sold is proof that this veil is what beekeepers want. There are others that look like this veil but there is only one Muth Ideal Bee Veil. **90c each.**

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Our supplies are manufactured under the greatest labor saving system. We sell direct to beekeepers and associations—you save the difference. If our supplies are not equal to the best that you can buy, ship them back and we will pay the freight both ways. You are the judge.

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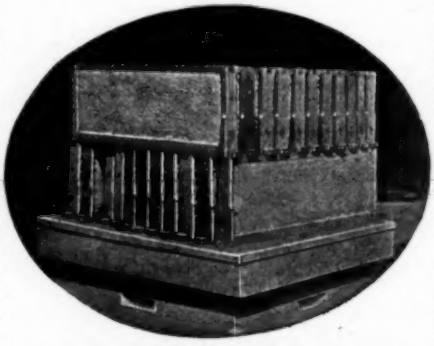
"The results from WIRED FOUNDATION were far beyond my expectations"

Says Dr. M. C. Tanquary, Fargo, North Dakota

Dr. Tanquary is well entitled to an opinion. He was formerly State Entomologist of Texas, with entire supervision of the State's beekeeping work—inspection, field work and research. His success in honey production, however, has made him one of our leading beekeepers. He has over 1,000 colonies, located in Texas, Kansas and North Dakota.

Dr. Tanquary writes: I take great pleasure in giving you the results of my work this year with Wired Foundation. I started in spring without a single drawn comb, and placed package bees in 250 Modified Dadant hives on Wired Foundation. The results were far beyond my expectations. Because of the backward spring, the bees were put out in very cold, disagreeable weather, yet in a very short time they had drawn out the sheets of foundation into the most beautiful worker combs imaginable. Later, it seemed to me that almost a whole colony of workers emerged from every brood comb, and soon the hives were overflowing with bees. The super combs were just as nearly perfect as those of the brood chamber, and when extracting time came I hauled many of these fresh combs a distance of 12 miles without having a single one break.



Some of the extracting combs from Wired Foundation—Every inch honey.

Wired Foundation is the best I have ever used and I am having all of my wax from this year's crop made up into that kind for next year.

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GLEANINGS IN BEE CULTURE

APRIL, 1925

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

The Importation of Queen-bees

THERE is considerable confusion in the minds of many in regard to the importation of queen-bees since the passage of the Isle of Wight disease law in 1922. The exact procedure as outlined by Jas. I. Hambleton, Apiculturist, is as follows:

Owing to some uncertainty in the minds of those ordering queen-bees from foreign countries, the attention of those desiring to have their orders filled promptly is called to the necessity of complying with the exact details of the law regarding the importation of queen-bees. This law and the special rules which are in force are contained in Department Circular 287, The Occurrence of Diseases in Adult Bees, II. This bulletin will be sent free on request.

Briefly, the rules are as follows: The request for permission to import queen-bees should be sent to the Bee Culture Office of the Bureau of Entomology, together with an order for the queens made out to the breeder from whom it is desired to order the queens. The necessary draft or money order made payable to the selected breeder should accompany the order. If the request for importation can be approved, the order and the money will be forwarded to the breeder with permission to ship the queens.

No order should be sent directly to a queen-breeder. Such action can result only in delay of shipment until the breeder has received permission from the Department, or in return of queens to the shipper if he should send the queens without first having received permission to ship.

The Department of Agriculture does not consider that the experimental and scientific purpose for which importations may be made under the regulations includes the importation of queen-bees for individual beekeepers merely for the purpose of requeening their own apiaries.

The above information is given merely to call attention to the necessity of complying with the details of the law, and no one should order queens without first having read the law and the regulations and special rules as contained in Department Circular 287, as mentioned above.

Jas. I. Hambleton, Apiculturist.
Washington, D. C.

The Honeybee in Literature

THE honeybee is evidently coming to the front in American literature. Gene Stratton-Porter's last novel, "The Keeper of the Bees," in which the wonders of the hive are woven into a delightful story, is being published in McCall's magazine; "The Bee-Hunter," by Zane Grey, is running serially in the Ladies' Home Journal; but probably the greatest bee story of the year, if not the greatest since Maeterlinck, is Dallas Lore Sharp's new book, "The Spirit of the Hive," by Harper & Brothers. The author, himself an enthusiastic beekeeper, sets forth the well-known (to beekeepers) things in bee life in a manner that lifts them above the commonplace into the glorified light of romance and poetry.

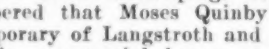
Journalistic Courtesy

IN an editorial discussion, "When Package Bees Are Profitable," in our March issue, reference was made to an article by Dr. J. H. Merrill, of the Kansas State Agricultural College, which appeared in the February issue of The Western Honey Bee. Dr. Merrill now informs us that the article mentioned first appeared in The Beekeepers' Item. Unfortunately the January issue of The Beekeepers' Item, in which the article appeared, failed to reach the Editor's desk, and since there was nothing to show that the article had been copied from another journal, it was erroneously credited to The Western Honey Bee.

Historic Collection of Books and Journals

THE books and journals on beekeeping formerly owned by Moses Quinby have been presented to the beekeeping library of the New York College of Agriculture at Cornell University, through the generosity of Mr.

Lyman C. Root, Stamford, Conn. In this way this historic collection of books and journals, together with the books since collected by Mr. Root, will be carefully preserved for the use of future generations of beekeepers. One important book in this collection is the first edition of "Langstroth on the Honeybee," which came into Mr. Quinby's hands and turned the course of his beekeeping. It will be remembered that Moses Quinby was a contemporary of Langstroth and was engaged in commercial honey production by means of box hives previous to the invention of the modern hive by Langstroth. The first edition of Quinby's book, "The Mysteries of Beekeeping Explained," in which he described his methods of honey production by means of the box hive, was published simultaneously with Langstroth's book announcing the invention of the movable-frame hive. These two books are classics in beekeeping literature and mark the beginning of modern beekeeping. The preservation of the personal collection of beekeeping books and journals of one of these great pioneers in the library at Cornell University is certainly a commendable thing.



Progress in the Right Direction

ONE of the most hopeful tendencies in beekeeping at the present time is that of getting away from the old methods of fussy feeding and other unprofitable work in the spring. More and more beekeepers are learning either to leave an abundance of honey with each colony the previous fall for spring brood-rearing, or to set aside supers of combs of sealed honey to be given to the colonies when needed in the spring. This more liberal treatment is not only resulting in stronger colonies at the beginning of the honey flow in most cases, but also saves an enormous amount of fussy labor during the spring. In these days of competition and lower prices the beekeeper who eliminates unprofitable labor will win in the race, while others will be compelled to be satisfied with smaller returns or turn to some other line of work. Those who put away good strong colonies supplied with 40 pounds or more of honey last fall and packed them well on their summer stands already have most of their spring work done, and will not need to give their colonies much attention until time to unpack them and put on the supers, unless it be to give additional room to prevent crowding as new honey may be stored from early minor sources. The elimination of spring yard work leaves the beekeeper free to do other work that should be more profitable.

Equalizing Colonies in the Spring

SOME who winter their bees in the cellar note carefully the strength of the colonies after setting them out, then later exchange places with the strong and weak colonies in order to equalize them. By shifting colonies about in this way during the first few weeks after the bees are taken from the cellar it is possible to make the colonies somewhat uniform in strength. The method for equalizing colonies, described by I. W. Cameron on page 233 of this issue employs this principle. Another method for building up the colonies to uniform strength in the spring is that of exchanging combs of emerging brood from strong colonies for empty combs taken from colonies less strong, as mentioned by J. E. Crane on page 226 of this issue. Still another method sometimes used is that of shaking bees from a comb taken from the brood-chamber of a strong colony at the entrance of a weaker colony, being careful not to take a comb containing the queen. When this is done the old bees go back to their hives, while the young bees go into the hive of the colony to be strengthened.

Of these methods, the one that has been most widely used in this country is that of exchanging combs, thus building up the weaker colonies with emerging brood from the stronger. If there is no brood disease present, the amount of brood reared during the spring can be greatly increased by equalizing the colonies, taking the apiary as a whole, since the medium and weak colonies may have queens capable of filling their hives with brood and lack only workers to take care of it.

On the other hand, equalizing colonies is extremely dangerous when either of the brood diseases is present in the apiary, for even with the greatest of care the disease would be almost sure to be spread by the exchanging of combs. Another objection is the amount of labor involved in handling the combs. Extensive honey producers are compelled to handle the combs less and less as they increase their number of colonies. In some cases the most serious objection to equalizing colonies in the spring is that holding back the stronger colonies in order to build up the weaker ones may bring the whole apiary up to the honey flow in a condition most conducive to swarming. This is especially true in the North, where the building-up period is short. Strange as it may seem, there is usually much less swarming in colonies

that have reached great strength previous to the beginning of the honey flow instead of after the honey flow has begun. In the former case the colonies become ready to swarm before the honey flow when it is comparatively easy to prevent swarming by giving plenty of room, while in the latter case colonies become ready to swarm during the honey flow when their sudden prosperity makes it more difficult to prevent swarming.

During recent years the tendency has been in the direction of more attention to the colony condition during the previous late summer and fall in an attempt to have greater uniformity of strength the next spring, then permitting the colonies to build up individually without any equalizing. When this is done any weak colonies can be boosted along by adding package bees. In this way the whole apiary can often be built up to enormous strength, thus carrying them by the critical period for swarming during a dearth of nectar, previous to the honey flow, after which the swarming problem is less difficult.

When the Food Chamber is Advantageous

IN regard to the food-chamber idea, which is so rapidly coming into prominence in this country, the question is often asked why it is not better to combine the food chamber and the brood-chamber in one by using a deeper hive, thus eliminating the necessity of a separate food-chamber by using a larger brood-chamber. This is exactly what has been done successfully for many years by beekeepers in localities having a dependable fall honey flow, or in localities where the main honey flow continues until late, then tapers off at the close so that the large brood-chamber is well supplied with honey for winter and spring stores. If, added to this, the late-gathered honey is suitable for winter stores or the locality is far enough south so that the bees have frequent cleansing flights during the winter and consequently that the quality of stores is not so important, the food-chamber and the brood-chamber can very well be combined in one. The fact that large brood-chambers are better provisioned at the close of the season in such localities than smaller ones, is their chief advantage. However, it is only in certain types of localities that even the largest brood-chambers are heavy with honey in the fall. Most localities do not have dependable fall honey flows, and in much of the best beekeeping territory in the United States and Canada the main honey flow closes in such a manner that there is but little honey in the brood-chamber when the supers are taken off, regardless of its size. This makes it necessary either to feed the bees for winter or save some of the honey from the supers to supply the needs of the colony through the fall, winter and spring.

In northern localities where it is not safe to winter on natural stores that may have been gathered late, making it necessary to feed sugar syrup to insure good wintering, the food-chamber may not be advantageous, since feeding must be done any way. However, in some such locations, even with the large brood-chamber there is not enough honey left when the supers are taken away at the close of the main honey flow to maintain the colony and keep up sufficient brood-rearing during late summer and early fall to insure a good colony for winter. In such cases it is often necessary to leave on the last extracting super until time to feed the bees for winter.

In the great majority of locations, therefore, the food-chamber is a convenient way of supplying each colony with an abundance of stores for late summer, fall, winter and spring. The food-chamber, being above the queen excluder during the main honey flow, is filled whether extracting supers are filled or not. It is then left tiered up among the extracting supers until the close of the season, when it is put down on the brood-chamber, thus insuring an ample supply of food in the most convenient position for the bees. Furthermore, the lower portion of the food-chamber, being filled early during the main honey flow, supplies the colonies with the very finest of winter stores, unless the bees have access to inferior honey late in the season which may be placed in the brood-chamber below.

The food-chamber, therefore, is of greatest advantage in localities which do not have a dependable fall honey flow, or which do not have a late tapering honey flow which results in the brood-chamber being well provisioned. It is not needed in those localities having a dependable fall honey flow, or having a late tapering main honey flow, nor in many cases where it is necessary to feed sugar syrup for winter stores.

The size of the brood-chamber has but little to do with the desirability of using a food-chamber in the former type of locality, while the size of the brood-chamber has much to do with the amount of stores in the brood-chamber in localities of the latter type. Brood-chamber and food-chamber can not be combined in one without feeding in localities of the former type, while they can in the latter.

CARDINAL POINTS IN QUEEN-REARING

By Allen Latham

Points to Consider in Selecting a Queen for a Breeder to Improve Honey-Gathering Qualities

[In their efforts to produce a strain of superior honey-gatherers, beekeepers have long been searching for some physical characteristic of workers or queen that is correlated with superior honey-gathering qualities, thus making it possible to tell, by looking at the workers or queen, whether or not the bees are good honey-gatherers, just as the dairyman is able to judge the milk-producing qualities of different members of a herd. Last fall Allen Latham pointed out to the editor a difference in the shape of queen and workers of different colonies, explaining that whenever queen and workers of a certain typical shape are found, the colony excels in storing honey. In other words, he believes he has discovered that for which beekeepers and queen-breeders have been looking in vain for the past half-century. In this article he tells what it is.—Editor.]

This is the first of a series of papers dealing with queen-rearing and treating in particular of the methods developed and followed by the writer. For the first one of these cardinal points, as I choose to term them, we will select that which I think will meet with the approval of all—namely, the choice of the queen-mother.

The ideal way to choose a queen-mother, and in truth the only final way, is to rear several daughters from the queen or queens in question, and then try out these daughters. In the breeding of most domestic animals such a procedure is not necessary, as the ancestral lines of the breeder are known, both maternal and paternal. With our bees we cannot possess that knowledge. Rarely, indeed, do we know anything at all about the paternal ancestry of a queen. Not until we are able to see the worker progeny of a queen can we feel assured that she has mated with a drone of her own race, and that she has mated with a drone of her own peculiar strain is not evident until we see her royal progeny.

It is not feasible, however, to try out every queen we possess in our search for a breeder. What, then, shall govern our choice of a potential queen-mother? I will give the best rules I know, and ask my readers to bear in mind that in this choice of a potential queen-mother we must always be prepared for a disappointing outcome. I speak for those who are forced by circumstances to keep bees where matings can not be controlled. Few beekeepers there are who are not included in this class.

Uniformity in Appearance

If one sets out to choose a breeding-mother from queens already old enough to have worker offspring, it is evident that all queens whose worker progeny show variation in coloration should be ruled out. This may seem to some to be an arbitrary ruling, but allow me to state that in my experience in breeding queens—an experience covering forty years—I have found that one cannot get satisfactory results from queens which throw workers lacking uniformity. He may get good queens, but he will probably also get poor queens. Assuredly, he will in the next generation get poor queens, even though the first generation may be fairly satisfactory. It is much easier to go down-hill in queen-breeding than it is to go up-hill. For rule one, then, in choosing the breeder, study her worker offspring with great care. If the workers are alike as two peas, then continue the examination of this queen.

Activity of the Workers

Study next the actions of the worker-bees. Are they full of pep? Do they fly from the entrance with a snappy zip? If they appear to leave the hive in a lazy manner there is strong evidence that the queen has purity of color at the expense of vitality. Then if the worker bees show pep, study their shape and size as they return from nectar-gathering. If their return is eager and their abdomens are ready to burst, they are good nectar-gatherers.

One may possess bees most beautifully marked and of great uniformity, but if those beautiful bees fail to get enough to support their colony, of what value are they? After all, beekeepers are after honey. First and foremost, bees must be honey-gatherers. Gentleness, beauty, prolificness, and any other qualities must all be discarded if the bees are not good honey-gatherers.

Significance of Ragged Wings of Workers

If the bees have measured up to the requirements thus far, and the queen has been established long enough for bees of all ages to exist, look next for the old bees. Did it ever occur to you that the presence of bees with ragged wings and worn bodies tells a story? Bees do not, as a rule, acquire ragged wings until the sixth or seventh week of their adult life. The presence of hundreds or thousands of ragged-winged workers in a colony will mean longevity. The absence of such bees in a colony generally means that the workers are short-lived. Longevity in the honeybee is perhaps the most valuable asset it can possess.

I have said nothing as to temper of

the bees. If the colony under examination is so nervous that it handles with great difficulty, one would do well to discontinue the examination of its queen as a potential mother. I would not, however, discard a queen because her workers were over-ready to sting. Even the gentlest of bees will under certain conditions be mean, and one might be overhasty in rejecting a queen which eventually might prove to be very valuable. There is but one feature in regard to the behavior of the workers which should cause immediate rejection: they must not be runners. There is nothing in the routine of bee work which will cause more annoyance than nervous, running bees. Bees in commercial beekeeping must cling quietly to their combs under manipulation.

Physical Characteristics of the Queen

Assuming that the worker bees come up to our requirements, let us study the queen herself. Does the queen in her appearance reveal anything? In the case

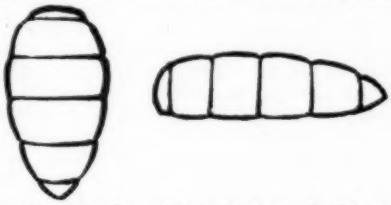


Fig. 1.—Dorsal and lateral view of abdomen of a broad flat queen.

of line-bred queens which for generations have produced a strain of bees of fixed characteristics, there will often be queens which, through accident or change of environment, are off-color, under-sized, or misshapen. Every beekeeper of long experience knows that abnormal queens will often throw perfectly normal workers and queen-daughters. It would not be safe, however, to be influenced by that fact. Reject a queen at once if she is misshapen, under-sized, or off-color. Such a condition may not be an accident; it may be a habit.

As to what shall govern us in the matter of color, size and shape, there will be great latitude for choice. Different strains and different races have a bearing here. In what I offer now it must be understood that my choice is regulated by the characteristics of the strain of bees I breed myself.

When I was asked to write this series of papers, I was requested to weigh and measure queens and worker bees, especially the full honey-sacs of the workers. After much deliberation I have given this up for the time being. It did not seem feasible to do such a thing during the dormant season of the bees. Results obtained might not be normal, to say nothing of the expense and trouble involved in making such a study in the winter months in our New England climate. If the work is worth doing at all it will bear the delay until the active season.

Believing as I do in the axiom that beekeepers are primarily after honey, I have for many years back made nectar-gathering the primal requisite in my bee-breeding. As time went on it came over me of a sudden that shape and nectar-gathering are correlated. Understand that this is theoretical. It may be that shape and longevity are correlated. Whatever be the correlation, I have found that good crops of honey were correlated with colonies having queen-mothers of typical shape.

Typical Shape Correlated with Higher Yields

In choosing a queen-mother, then, I choose one with a large depth of abdomen. By this I mean a large measure-

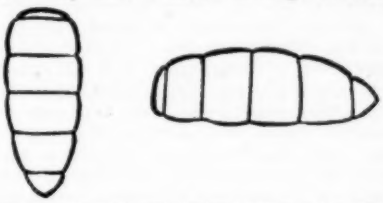


Fig. 2.—Dorsal and lateral view of abdomen of a deep, narrow queen.

ment from back to belly, or as the scientists would put it, a large measurement between the dorsal and ventral surfaces of the abdomen. Why a queen of such a shape will produce a honey-gathering colony is still a matter for conjecture. Possibly the narrow worker finds it easier to fly with a heavy load than does her broad sister—or remote cousin. The accompanying simple diagrams will show more clearly what is meant. Fig. 1 shows dorsal and lateral views of the broad queen. Fig 2 shows the same views of the queen I elect to choose as a potential breeder.

These illustrations, though rough and simple, should make clear what I have described above. Queens with deep abdomens will throw worker bees of marked ability in nectar-gathering—hence the choice. The chosen queen should also show sturdy and long legs. After her mating the queen rarely uses her wings, but she is using her legs most of the time. They must stand the wear and tear of climbing over the combs and making many a step for every egg laid. Consider for a moment that a queen bee in her active laying must, in terms of human activity, walk many miles every day.

It goes without saying that a queen-mother must be a good egg-layer, and this being so self-evident I will use but little space for that matter. Other things being equal, choose a queen with compact brood-nest rather than one with a loose brood-nest. If other things are not equal, be slow to reject a queen otherwise excellent simply because her brood-nest is ragged. That feature is very likely not to show up in her daughters. It is, however, a thing not to be ignored, and care must be shown here as it must in all parts of this matter of queen-rearing.

The next paper will consider the cell-cup, describing the character of the cup to give best results, and how to make it.

Norwichtown, Conn.

THE RACES OF BEES

By Phillip J. Baldensperger

Two of the Yellow Races of the Orient, the Syrians and Palestinians, or Holy-Land Bees

Apis mellifica, var. *Syriaca*, Buttel-Reepen, 1906. Most probably the early Greek settlers from Cyprus came over to Syria, bringing Cyprian bees with them. The cultivated bees brought over, becoming more numerous, were slightly hybridized by the darker bees already present all over the mountains of Syria. On account of their isolation in the mountainous regions, they soon became a fixed race, occupying the territory south of the Taurus Mountain range. We know that bees do not wait for man to transport them whenever the country bids them pasture, and therefore the dark races of bees found north of the Taurus range, and the yellow races south, advanced along their separate regions till dark and yellow bees met in the Caucasus district, where yellow and blacks are found. These are the Caucasian bees to be mentioned further on.

Frank Benton and D. A. Jones, after having established the Cyprus apiary, came over to Beirut, in Syria, and prepared for their Syrian queen-rearing. It was, moreover, easier for them to mail queens from Beirut, as French and Austrian steamers visited the town every week. Dozens or hundreds of Cyprian and Syrian (and occasionally Palestinian) queens were shipped to Europe and America from Beirut. For several years they shipped the bees in small nuclei, consisting of two small frames not exceeding 5 by 3 inches. It was in 1881 and 1882 that mailing-cages were admitted to the mails, and the first bee that ever crossed the ocean in a mailing-cage was sent by the author from Jerusalem to Chicago.

Those early cages had a supply of water in bottles or tin cans, and Good candy. Later on, when Benton had perfected the well-known mailing-cage bearing his name, he employed the actual sugar-and-honey candy. Queens were mailed successfully by the author to Benton, first to Athens, in Greece, and then to Munich, in Bavaria.

The special coloring of the Syrian bee consists in a pale orange on the first three segments of the abdomen, and the black border of these same segments, as well as the black coloring of the final segments. The fuzz covering the thorax and ring edges is yellowish, the crescent being dark brown.

Like all Oriental species, the Syrians are early risers and gather honey as fast as they can get it if they are located in a good honey-producing region. Beruit and the Lebanon being mostly devoted to silkworm-rearing, mulberry trees are found wherever it is possible to raise them. The mulberry gardens were usually inclosed by cactus hedges, from the bloom of which the bees could gather a dark honey which often crystallizes in the comb.

The queens are very prolific, and slightly smaller and less brilliant than the Egyptian queens. They can easily keep up a population of 50,000 bees on an average, and usually have quite a fair number of drones when old queens are in the apiary or vicinity. On account of the continual shipping of queens during the summers of 1883 and 1884, drones were very scarce, and queens were very apt to fly out for their nuptial flight several times before meeting a drone. Good-sized colonies would raise up to 200 cells in the swarming season. Wax-moths, which developed easily in warm climates, were easily kept out as long as the hives were in good condition.

Toward the south, the Syrian bee exists as far as Hamzet-el-Muhr, the Passe-Poulain of crusading days, between Tyre and St. Jean d'Acre, where the Palestinian race begins.

Palestinians, or Holy Lands.

Apis mellifica, var. *Terra Sancta*, Baldensperger. The Holy Land bees, or Palestinians, are generally confused in description, either with the Egyptians or with the Syrians. They are related to

both, but have a few very distinct features which distinguish them from either. Frank Benton, who, with the author, had the greatest experience with these bees, writes in the American Apiculturist, Vol. I, 1883, as follows: "Mr. Doolittle claims as a fault that the queens of the Holy Lands, as he calls them, are extra prolific, and they seem to think that a large flow of honey should mean lots of brood, so to brood-rearing they go." Benton goes on to say that Mr. Doolittle starts out with "Holy Lands," and concludes with a very different race—the Cyprian bee. Doolittle continues: "They have another exceedingly bad feature, which is, that, before the young queens are fertilized in the parent hive, which has cast a swarm, fertile workers spring up, and the result is a queenless colony." Benton very judiciously answers: "If left to themselves, the young queens of eastern races are just as sure as those of any other race to become fertile and commence laying."

Pfarrer A. Ludwig, in Unsere Bienen, published in 1922, writing about the Egyptian bee, says: "The home of the Egyptian bee is Egypt and Syria. Baldensperger, who knew the bee in Egypt, says that she is a good worker, though having robbing and stinging propensities, etc." The reverend gentleman confuses the author's description of Palestinian with that of Egyptian bees. The two countries are very distinctly divided by the sandy waste; and what is true of the Egyption is not always true of the Palestinian, and vice versa.

Benton's observations on these bees are not always correct. He says, in American Apiculturist for December, 1883: "They crawl from the frames upon one's hands, and quite impudently creep under sleeves and cuffs, biting the flesh and then curving their bodies and stinging. They crawl on the combs, and drop off much like black bees." Evidently Benton was prejudiced against Palestinians for some cause or other, for they never drop off the combs when handled.

At first sight Palestinians, like all yellow races, are at once pronounced Italians. To the more expert beekeeper they differ in many ways. The first three segments of the abdomen are citron-colored, bordered with black, the last two or three being black. The fuzz of the Palestinians is grayish, and when young and hairy they seem gray. The crescent at the base of the thorax is of a dull grayish color. They are very nervous—more so than their northern cousins, on account of more numerous enemies lurking around the hives, and must be very prudently handled with plenty of smoke. The worker bees are distinctly smaller than the Cyprians or Syrians, and so are the drones. The yellowish spots of the Cyprian drones almost disappear, though yellow segments are still conspicuous. The hairy tails of the males give them an appearance of small bumblebees.

Palestinian queens are very slender, but this does not influence their laying capacities. They are as prolific as the queens of other races. The bees raise more queen-cells when preparing to swarm than their northern neighbors, and it is not rare to find several dozen on a single frame. A hive in Jaffa had upward of 385 queen-cells in a colony ready to swarm.

Left to themselves, and without the help of comb foundation, they will build about 25 per cent of drone comb after having built the first six combs of worker brood. A Palestinian queen will lay drone eggs very soon after fertilization, provided there is a good honey flow, without neglecting worker brood. They have no respect for bee literature or etiquette, which expects every respectable northern bee not to commence drone-laying before the eleventh month of their lives.

Oriental yellows may be classed as the smallest in Egypt; Palestinians next; then Syrians, and, finally, Cyprians, which are the largest of the four races. Some find that Egyptians build 21 worker-cells on a length of 10 centimeters, while the brown European bees construct only 19 worker cells in the same space. The three other races have gradually larger cells as we go northward.

Many beekeepers have stated that bees grow in size in the course of one generation if larger cells are given to them; and Cori, of Bohemia, even states that his Asiatics from Smyrna and Cyprus grew so fast that visitors to his apiary mistook his Asiatic workers for young queens (Ludwig, Unsere Bienen, p. 168). The author and his brother, who have kept Palestinian bees by the hundreds of colonies, mostly in Palestine, for the last 44 years, have never seen these bees influenced as to their size, either by climate east or west, nor by European-sized comb foundation. In the year 1884 we were short of combs, and ordered about 10,000 sheets of comb foundation prepared on Root's foundation-mills. The cells were built by the Orientals on European-sized cells, and Palestinian bees emerging generation after generation continued to have the same size as their ancient ancestors which had never known foundation, though the bees just as readily built their cells on the foundation as if they had always known it. Bees did not learn to build foundation by degrees, nor as they became more civilized, as Mac-

terlinck, a well-known poetical writer, states.

It is difficult to decide with absolute certainty whether the Palestinians have sprung from the Egyptians or whether they are an offspring of the Syrians. Either hypothesis may be correct. Externally the Palestinian resembles the Egyptian in size, color and nervousness, all these characteristics being somewhat attenuated, as larger size, brighter color, etc. On the other hand, it resembles or even surpasses its Syrian congener as to storage of honey.

How long have bees been known in Palestine? *Debora*, the Hebrew word for a hornet, was translated *bee*. The Hebrews did not know bees, and therefore when bees came in later the name of *Debora*, meaning "stinging fly," continued to be used as the term for hornets and bees. *Dabsh* was the Hebrew word for grape juice, but was rendered "honey" by European translators of the Bible, who did not know the grape juice of the Orient. When, later on, bees' honey actually was known, it was also called *Dabsh*. Solomon, had he known bees, would have mentioned them as one of the marvels of creation. He mentions the flight of the eagle, the work of the ant, and the twisting of the serpent, but does not mention bees, the most marvelous of creatures.

Dr. Silas Clarke, who visited Jerusalem in the beginning of the previous century, heard from the most ignorant of monks in the Greek monastery that "the Palestinian bee was the first race of bees given to man." Forty years later, F. W. Vogel decided that the Italian bee is an outcome of a cross of the *original bee*, which he supposed to be the Egyptian because he was entrusted with a hive or two of the Egyptians in the heart of Germany, and that the Egyptian bee was the mother, and the German the sire, of the Italian. Mohammed was more generous. Though living in Mecca, he said that "the bee was a special gift of the Lord."

Very likely, however, bees were known in the maritime plains of Philistia long before the Hebrews in the mountains of Judah and Ephraim knew them. In fact, when Jonathan, the son of Saul, pursued the Philistines and surprised them in their camps, he overthrew jars of honey, or comb honey; and, having tasted, said, "See, I pray you, how my eyes have been enlightened because I tasted a little of this honey." The Philistines had come from the Grecian islands, and had brought hives with them, but kept the craft secret.

The most accurate of Jewish prophetical writers, Isaiah, says, chapter 7:18, 19, "The Lord shall bring upon thee days that have not come since Ephraim departed from Judah, and the Lord shall hiss for the fly that is in the uttermost part of the river of Egypt, and for the bee that is in the land of Assyria, and they shall come, and shall rest all of them in the desolate valleys and in the holes of the rocks, and upon all thorns, and upon all bushes." Bees were known, therefore, only after the Captivity. Shut in as they were and still are, the Assyrian and the Egyptian races crossed and formed a fixed race. The country is surrounded by deserts on the east and south; by the Lebanon Mountains on the north, and by the Mediterranean Sea on the west.

BOTH ENDS OF THE PACKAGE BUSINESS

By Jay Smith

Suggestions for Improvement on the Part of Both Shipper and Purchaser

Having had considerable experience in the package-bee business, both as a buyer and seller, I believe my experience may possibly be of help to some. I no longer sell package bees, therefore I feel free to "get off my chest" my past experience. That the package business has passed the experimental stage is agreed. No doubt the future will see packages shipped by the car load. If shipped when the weather is cool they should go through in fine condition, and in case the weather is hot they can be sent in refrigerator cars.

In order to get the most out of packages, they should be secured early in the season, for the bees in the packages will do little at honey-gathering—their office is to rear brood and bees for the harvest. It can be seen, therefore, that the bees must be secured early enough so that there will be plenty of time to rear at least three cycles of brood, or at least nine weeks before the harvest. If one has a good young queen in a three-pound package, and if the bees are mostly young ones, this package should be equal to the best colony that has been wintered either in the cellar or properly packed outside. Such packages are ideal for making increase and for making up for winter losses.

Package Bees Instead of Wintering

I have heard some say that in the future the northern beekeeper will kill off his bees in the fall and replace them with package bees in the spring. I do not believe this will ever be profitable and I can not see how they figure that it will be. However, let those who believe it is profitable give it a try-out, for we are willing to be "sighted." In the first place, if bees are properly wintered it requires little honey to bring them through the winter up to April first. They require large quantities of stores after this time to rear brood, but it would take the same amount at this time if one purchased package bees, for they also have to make bees out of honey.

Let me say to any beekeeper in the North who is thinking of killing off his bees in the fall, that he will not have to do so, for there will always be beekeepers who will wish to winter their bees, and whose slogan is the same as mine: "The more bees the better, any old time of year." Therefore, instead of killing off their bees in the fall, they can readily sell them to other beekeepers. Naturally the price would not be as high in the fall as in the spring, but there has seldom been a fall when I would not have been glad to buy bees if I could have gotten them at a price. Who does not have some colonies in the fall that are almost too strong to unite with another, and yet hardly strong enough for the best wintering? A three-pound package put with them would make a fine colony to winter.

How to Prevent Dwindling of Package Bees

In order to get the most out of packages, the bees must be young and must be shipped in the right kind of cage so they will not worry and wear themselves out. In the March Gleanings Dr. Merrill is quoted as saying that a third of the bees die off the first three weeks. While I have not kept any accurate account, yet I am certain that the packages that I have bought do not die off that rapidly. They are shipped one day and I receive them the next. They are largely young bees and I get them the first of April, while the weather is cool. They do not seem to dwindle, as far as I can see, and as soon as the young bees begin to emerge they build up rapidly.

At the end of nine weeks most of the package bees are gone, but sometimes a few hold out that long. Both in selling and in purchasing, I have known the bees to dwindle away so fast that most of them were gone by the time the first brood began to emerge. These bees were shipped during hot weather and part of them were dead upon arrival. Since part were dead, it stands to reason that the rest were nearly worn out and would not live long.

To get the best results, it is best to hive the package bees on fully drawn combs containing honey and pollen kept over from the year previous. It is still better to place a frame of brood in the center of the hive. Two empty supers or an empty hive body is then placed on top. The cover is taken off from the opening in the package and the package is placed on top and the hive cover put on. The bees immediately go down to the frame of brood and there is never any absconding or drifting. If the queen is in a cage she must be introduced in the regular way. If she has already been introduced and is loose with the bees, she begins to lay within five or six hours and all is well. A good feed of syrup hustles things up.

Loss of Queens in Package Bees

In my experience in selling package bees, I found that there was a large loss of queens when they were sent in a cage with the bees, in case the queen was taken from a nucleus or another hive and therefore had to be introduced to the package bees. I found that it is more difficult to introduce queens to the package bees than to a regular colony. I attribute this to the fact that the bees are not in their natural condition and are cross. In one case I sent ten packages to Winnipeg, putting the queens in cages, figuring that it would take them two days to eat the queens out. When they arrived the queens had just been released and eight of the ten were killed. Later I fixed it so the bees could not release the queen till after arrival, and then it took two more days for the queen to be released. In that case the loss was from ten to twenty-five per cent.

This became a serious matter. If the purchaser merely lost the price of the queen it would not matter; but his loss was much more, even when I replaced all queens lost. In the first place, he had to wait several days to know that the queen was lost. Then several more days elapsed before I could send him another queen, provided I had the queen on hand to send. By the time I got the queen to the customer, the package bees had dwindled or had developed laying-workers, and the new queen would be killed. In such cases he lost both queen and package of bees. Where the queen is sent in a cage and it is left to the beekeeper to introduce the queen, he bears the loss of both queen and bees.

Queens Should be Introduced by Shipper

To overcome this loss, the last two years that I sold package bees, I introduced the queen to the colony from which

the bees were to be taken. I used the push-in-the-comb cage for introducing the queen and after she was accepted and laying nicely, she was shaken into the cage along with the bees. In shipping several hundred packages in this manner there was not the loss of a single queen. All parties reported that the queen got right on the job and there was no loss of bees and no time lost in introducing. As it has been stated that the package bees dwindle rapidly, it can be seen that every single hour at this time is valuable. I have always felt that the queen should be introduced by the one selling the bees, as the loss would not be so much were he to lose a queen in introducing, while if the queen is lost in introducing by the purchaser, he loses queen, bees, express charges, cost of shipping cage, and his prospective honey crop.

I have also purchased package bees with the queen already introduced and it is so much more satisfactory that I am willing to pay fifty cents or a dollar extra per package for this service. When the queen is already introduced it is well to have her wings clipped; and if a frame of brood is given, the bees can be shaken in front of the hive and hived like a swarm. In doing this, however, it is better to wait till after dark, so that the bees will not fly around so badly. If one has many to put in, it is not pleasant to work half the night, so in that case it is better to put on the empty supers, as before mentioned.

On one occasion I purchased ten packages and the queens were in cages and hung among the bees. As they had been on the road three days, I thought the queens and bees must be acquainted, so I turned the queens loose. A few hours later I examined them and the bees were balling every queen. One queen was dead, but I rescued the others and succeeded in introducing all of them. But about five days was lost to the queen, which was a big loss when the bees were rapidly wearing themselves out.

Vincennes, Ind.

CENTRAL APIARY PLANT

By Morley Pettit

How to Save Labor and Annoyance by Carefully Made Plans for the Central Plant

When planning a central apiary building eight years ago it seemed that a two-story building twenty-four feet by forty feet would be pretty large, and so it was, for those days. Still, when the trenches were dug for the foundation and we could see how it was going to look, my sister said it was going to be too small. I could see it myself, but hated to change the plans after the contract had been let and the work started. As usual she was right, and we were always cramped for room. A large wing has since been added, but the result is not like starting right.

If I were building again I am not sure that I would change the general plan, but I would make the structure larger every way. Perhaps about forty feet by eighty feet would be a comfortable size for an outfit of a thousand colonies. There might as well be two full stories and attic, although the latter would not be of much use with the roof nearly flat, as it should be. The lower story would take care of all the honey and wax, and store most of the extracting supers, and, of course, the automobiles. The upstairs is for carpenter and repair work, painting, etc., and the storage of all lighter material and new supplies. All work on material is done in or near the room where it is stored, to save handling.

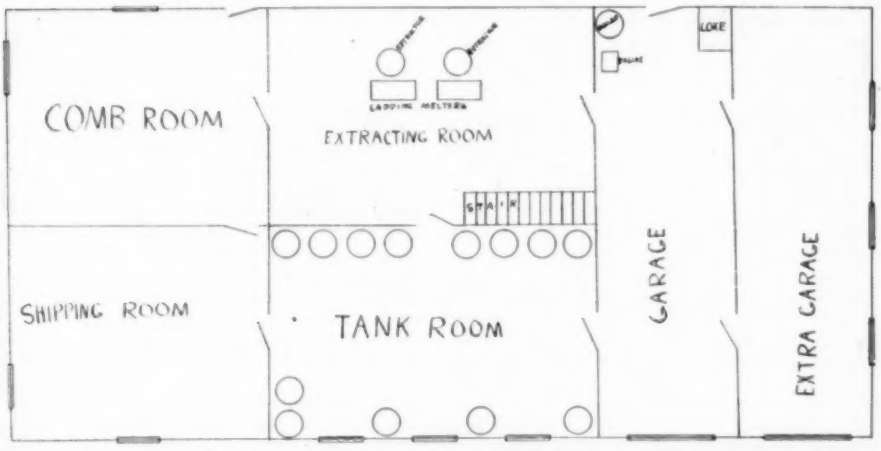
The foundation of such a building should go below the frost line and should be well drained. All ground floors are of concrete, with a drain in middle of every room for flushing out with the hose and floor brush when necessary. There should be plenty of large windows in every room, and ceilings should be high and airy, but not too high. About ten feet is a good height downstairs and eight to nine feet upstairs. Always remember that whatever occupies floor space takes up all the space between it and the ceiling. Most material in boxes or supers can be piled nine feet high without inconvenience, and a floor there makes the space above it available for further use. But where a gabled roof towers up above a ground floor, the loss of enclosed space is too great. Then for economical storage I like a wall once in a while to pile things against.

General Plan of Building

It would be ideal to have a different room for each class of material and the work pertaining to it. This is hardly practicable, but it is something to keep in mind. The next best plan is to classify work according to requirements. For instance, extracting, feed-making and wax-rendering all require steam and a floor that can be flushed with the hose, so we do all three at different times in the ex-

tracting-room. The extractors are the only machines used here that are permanently installed. The capping-melters, wax-boilers, and feed-cookers can be moved in as needed, and steam is conducted to them by means of hose attached to steam outlets in the ceiling. Besides the extracting room, I have on the ground floor a tank-room with capacity for thirty thousand pounds of honey as it is pumped direct from the extractors, a shipping room where crated honey is stored ready for shipment, a comb-room especially for extracting supers of empties, a garage which contains the boiler and is used for storing full supers, and I should have an extra garage.

Upstairs are the office, carpenter shop, paint shop, frame and foundation room, etc. I have designated one for comb-honey supplies, and the one marked



Ground floor plan, 40 x 80 feet. Filled supers are stored in the heated room marked "Garage," then taken by hand truck to the extracting room and finally the supers of empty combs are trucked to the comb room for storage. Honey is pumped from extractor to tanks.

"store room," is a sort of upstairs hall, as the large trap door which takes the place of an elevator opens into it. Perhaps an elevator would be a good thing. I have no doubt it would. Please remember that the building here described is more than what actually exists at the Pettit Apiaries establishment. The general plan is the same, but some things are being written into the account which have not yet been acquired.

Filled Supers Stored in Heated Room

To take up the rooms in detail, let us begin where the supers come in from the apiaries. The double doors where the trucks drive in should be as wide as the room allows and as high as the ceiling. Ordinary garage doors will answer, but sometimes a high load of empties will catch the top and do damage. We back in with our loads and unload from the rear end, stacking the supers closely, starting just as near the boiler as we dare without risk of melting down combs. Sometimes there will be five hundred or more supers of honey piled in this room, and as the boiler in the same room is fired for a steam engine they are kept thoroughly warm. Temporarily the trucks have to stand outdoors or would be stored in the extra garage.

It is possibly a little less convenient unloading than it would be with the truck on a lower level so a man could walk directly from the truck to the storage floor with a super in his arms. On the other hand, he backs the truck right up against the piles of supers, and half of them do not need to be lowered to the floor at all, but lifted up on to the piles. Even if he carried them the same distance, he would stand erect beside the truck and receive his super at the best height for carrying it, whereas if he walked directly from the floor to the truck floor he would have to stoop and lift the full super from the floor, straining his back to regain an erect position for walking and carrying the super. Of course, a floor truck could be used, but I believe my system of backing right up to the piles of supers is best of all.

There is still another consideration which, to my way of thinking, puts the lowered truck floor clear out of the question. The trucking home of honey only lasts a short time at best, and all the rest of the season we have to live and work in this building. How much more restful it is to have a building all on level ground, with all ground floors even and all upper floors the same, with only one flight of stairs and the material and work

classified so as to reduce stair-climbing to a minimum.

Arrangement of Storage-tank Room

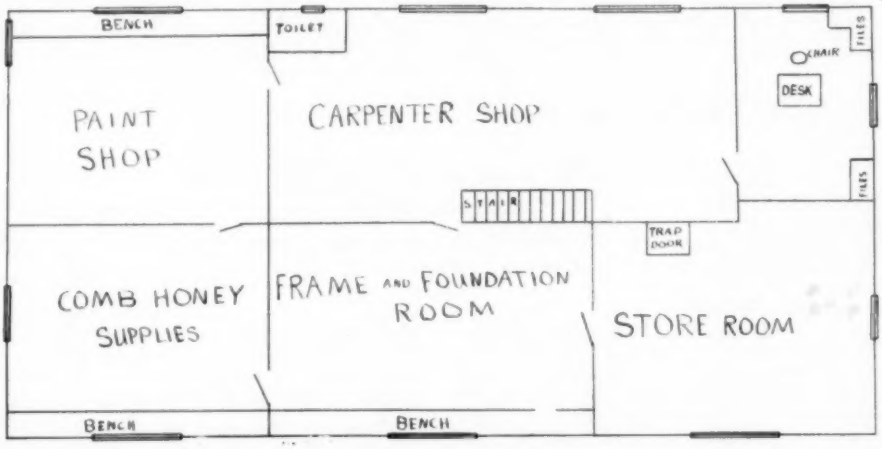
What I have just said will apply with equal force to the delivery of honey from the extractors to the storage tanks. Our tank-room is on a level with the extracting-room. The pump lifts the honey to the ceiling and forces it along the pipe for delivery into the tank. There is no running downstairs to see if the tank is going to run over. An alarm could be easily arranged with a float which would close the circuit and ring the bell when the tank is full, or a mirror could be hung on the ceiling, so that the height of the honey in the tank could be seen from the floor.

In twelve years we have pumped quite a few hundred thousand pounds with the same three-quarter-inch pump. Running slowly, it will handle over a thousand pounds per hour. In the twelve years we have not had one single complaint which could in any way be attributed to the pumping of the honey. When the pump is through with it, the honey is stored high enough so we can work in a comfortable position tinning it up, then load the crates of tinned honey on a floor truck to wheel them into the shipping room for stacking. They are then not down cellar, but are stored up above the level of the ground.

The extracting-room has two extractors and two capping-melters. The extractors are close to the windows and the melters just back of them. The floor truck is used for bringing the full supers from the stacks to the melters. Fifteen supers are brought at a load and the uncappers take turns in bringing them. Of course we have a wall sink and running water on tap in the extracting-room, and at the end of each day one man takes the hose and another a floor brush and all honey is soon scrubbed off the floor and washed down the drain. Next morning we have a clean, dry floor to start operations.

Arrangement of Second Floor

The stairway leading upstairs is just two feet wide, but of easy grade. I figured that with the trap door for handing goods up and down from the truck, and with another door in the side of the stair enclosure for handing things to a man on the stair, not much carrying would be needed. This width seems quite satisfactory. With the exception of the office, the uses of the rooms upstairs are more or less interchangeable and elastic. The room marked "carpenter shop" is heated by steam from the boiler, as is the office. Every room has ample work benches strongly and solidly built along outside walls. Over these benches I would have windows built along horizontally with, say, two out of three sashes hinged to open inward. End windows are tall and placed near the outer corners of the buildings to leave larger inner wall space for storage. As previously mentioned, work on each class of material is done where it is stored. New frames and foundation are stored against the inner walls of the room where they are to be made up. Boxes in which they come are so opened and stacked that they themselves form sectional shelving for storage.



Second floor plan. Supplies are handed through trap door from truck in garage below to store above. Assembled supplies are loaded on truck through trap door. Note that different kinds of work are carried on in separate rooms.

Georgetown, Ont.

PREPARING FOR THE HARVEST

By J. E. Crane

Work that Can be Done in Winter and Early Spring in Comb-Honey Production

It is an old proverb that "you can't make bricks without straw." I don't know how true that is, but one thing I do know: You can not get a satisfactory crop of comb honey without bees—lots of them, and then more. It was a saying of Napoleon, that Providence favors the largest armies, and I am sure Providence, as well as the season and good luck, all favor the beekeeper who succeeds in having his colonies extra strong at the right time.

"But how shall these large colonies be secured?" I hear some one ask. When an architect would rear a grand edifice he lays the foundation deep and broad, often going fifty or more feet below the surface to find bed rock on which to build the superstructure.

Foundation for Honey Crop Built Last Season

So those who would secure a good crop of comb honey must go back many months and lay a sure foundation. If there are any old queens likely to fail during the winter or early spring, they should be removed and young queens given. This takes but little time, but may prevent the failure of a queen in May. If we lose a queen then it is the same as losing a case of honey, according to our experience. Five dollars is a rather heavy penalty to pay for a little carelessness. We keep a record of the age of our queens.

Of course, all colonies should be carefully wintered, either in well-packed hives out of doors or in a good cellar. Many beekeepers are apt to be a little careless in this matter here, but if one loses out in wintering, it is very difficult to make up for it during the spring.

Shop Work is Done in Winter or Early Spring

The winter soon passes by and it is March, but the nights are cold and the air still crisp by day. The days are getting longer and we are reminded that there is work in the shop to be done if we would be ready for outdoor work with our bees when it gets warmer.

Sections must be made up, foundation cut and fastened in each section, old supers repaired or new ones made, and everything made ready for the season.

Cutting Foundation and Folding Sections

Foundation, as it comes from the factory, is approximately 15¾" long by 3⅞" wide when designed for 4¼x4¼" sections. Twenty or thirty of these sheets can be placed one on top of another in a box made for the purpose, and all cut through at one stroke of a saw-edged knife, and we have enough pieces for a hundred sections in a jiffy.

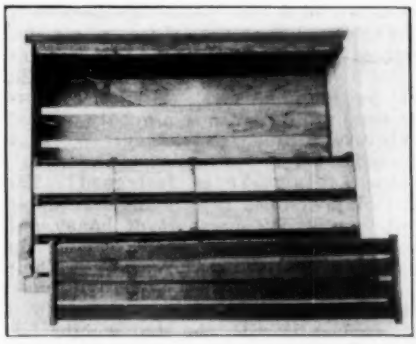
We put our sections together on an old foot-power machine which I made more than forty years ago. With this, an active man can put together 500 one-piece sections an hour. After using one-piece sections for several years, I confess I like the old four-piece sections better, for when put together with glue they stay. We break very few one-piece sections now in setting them up, but lots of them get broken in taking them out of supers when stuck up with propolis, which, of course, unfits them for market, if it does not wholly ruin them.

Fastening Foundation in Sections

We have tried a number of devices for putting foundation into sections. We have used a variety of hot plates and lamps, not one of which has proved wholly satisfactory. The difficulty has been to keep the plate hot enough without having the lamp smoke. If the plate is not quite hot enough it may melt the foundation just enough to stick it to the section, but when the bees begin to work it, it may drop down and the section of honey is so irregular as to be nearly worthless. For this season's work my son has prepared a plate with a piece of sheet copper riveted to the under side, and by connecting with the town electric plant we can get all the heat we want for melting the edge of the foundation without any smoke.

Advantages of Plain-section Super

We use a super for plain sections. The



J. E. Crane's comb-honey super. The sections are supported by slats nailed permanently in place. The fences have wooden pins for spacing the plain sections instead of the three central posts. These pins are glued in place in slots mortised through the slats, thus permitting the bees to pass freely from section to section.

sections rest on slats in the bottom of the super so bees will not coat the bottom of the sections with propolis. We also use fence separators so that bees can pass freely from section to section and from one end of the super to the other. When solid separators are used, sections in the center of the super are well filled, but fall off in weight toward the sides, while supers with fences are filled more evenly. This more even filling of the sections will make a difference of about two pounds per case of twenty-four sections.

In addition to preparing sections in winter or early spring for summer use, we should also prepare all the hive bodies and frames of brood foundation we are likely to use during the season.

The Approach of Spring

As we push our work along through the spring, the sun mounts higher and higher day by day, and the birds, one kind after another, come back to us from the southland. We can not help thinking then what a splendid thing it is that the earth is tipped just 23½° to its orbit, thus giving us our changing seasons. How wonderful it is that the earth in its journey of 560,000,000 miles around the sun should come back to the same position without the variation of a second of time from year to year. The sun is always "on time." The rising of the sun in the heavens brings with it warmer weather, and it is soon time to look our bees over again to see just how they all are.

What Bees Say on First Examination in Spring

What pleasure it gives us to open hive after hive and greet each colony, as it were, and say, "How do you do? Is there anything we can do for you?" Of course we don't do it just to be polite, or because we have not been together for a long time, but rather because we are anxious to know just how they all are.

But listen to the replies we get. The first one perhaps says, "Thank you; we are very well. We have a goodly amount of bees and brood and honey. We shall be ready for the harvest when it comes." Doesn't that make us feel good? The next hive we open says it has been doing well, but is getting short of honey and has begun to check brood-rearing for fearing of starving. "We can help you," we say, and take a comb from their hive with little or no honey in it and replace it with one that weighs five or six pounds.

The next one we open says, "We reared a queen late last year and did not have time to build up for winter, and as a result we are very weak." All right; we will take away your two or three combs with small patches of young brood on them and give you one good sized comb of emerging brood, from some hive that can spare it. We will place it by the side of the hive, with another half full of honey beside it, and then a division-board or a heavy comb beside that one to keep it warm.

We open another colony and it seems a little independent. We have to give an extra whiff or two of smoke to make it behave. Listen to what it says: "We are all right. We have bees enough, brood enough, honey enough; we shall be ready to swarm by the time fruit trees bloom." And then it quotes that old saying:

> A swarm of bees in May
> Is worth a load of hay.
> A swarm of bees in June
> Is worth a silver spoon.
> A swarm of bees in July
> Isn't worth a fly.

But we give them to understand that we do not care for extra-early swarms, and proceed to take the wind out of them by taking away three or four of their best combs of brood to help their neighboring colonies that may be behind, so all may be strong enough to swarm by the time clover blooms. We replace these brood-combs with good, clean, empty combs that in a few days will again be filled with brood.

Of course, the bees do not talk to us in an audible way, but they do tell us just what each hive wants in a way that we can understand.

Supplying Every Need for Brood-rearing

What a pleasure it is to supply each and every want, so that the rearing of brood may proceed as fast as possible through the cool spring weather. We must make the brood-nest as warm as possible; see that all are well supplied with stores; give brood from strong colonies to build up the weak ones; but we must do it so carefully that no brood will get chilled, and use the greatest care not to take combs from diseased colonies to give to healthy ones.

When we remember that a strong colony at the beginning of clover bloom may give us 100 well-filled sections, and that 100 weaklings may not give us even one section of clover honey, we see the necessity of strong colonies for securing good crops.

Middlebury, Vt.

[Mr. Crane's last paragraph contains the explanation of many failures to secure a crop of honey. Of course, strong colonies can not store a big crop during a poor season; but every season is poor for colonies that are weak at the beginning of the main honey flow, especially when it is of short duration.—Editor.]

POLLINATION OF ORCHARD FRUITS

By Glenn W. Herrick
Professor of Economic Entomology, Cornell University

The Role of the Honeybee in this Important Operation. Why Bees are Necessary in Orchards

Orchardists are coming to realize more and more clearly the usefulness, indeed almost the necessity, of the honeybee in the successful growing of orchard fruits. Careful investigations during recent years and practical demonstrations in orchards have shown the importance of the honeybee in the production of large yields of fruit, and in the quality of the fruit produced. In order to prove the role of the honeybee in the pollination of fruits and its great worth to the orchardist in the production of fruits it will be necessary to show: (1) that the common orchard fruits are self-sterile and therefore demand to be cross-pollinated; (2) that the honeybee, when present, actually performs a great part of this cross-pollination. It will not be possible in this limited space to go into great detail. We shall have to content ourselves with brief statements of the conclusions of different authorities who have investigated these problems with great care.

Common Orchard Fruits Are Largely Self-sterile

If we examine a common blossom we shall find that it contains the following structures: sepals, petals, stamens and pistil (see figure). The stamens and the pistil are the essential parts of the flower. The pistil consists of a long, slender stem, or neck, with an enlarged part at the bottom, containing the tiny embryo seeds. It resembles in form a tall, slender vase. On the upper end of the pistil is a wet sticky surface known as the stigma. The grains of pollen from the tiny bags (anthers) on the ends of the stamens (see figure) must alight on the stigma, and there each pollen grain germinates much like a seed and sends a long slender root-like tube or filament down through the stem of the pistil until it reaches an embryo seed and fertilizes it. In this way the seeds of the apple are fertilized, each one by a grain of pollen which has somehow managed to get on the tip end of the pistil.

There is a tendency among plants to prevent self-fertilization—that is, to prevent the pollen from a stamen in a certain flower from fertilizing the embryo seeds in the pistil of that same flower. To put this in another way, plants tend to prefer to have the embryo seeds in a flower cross-fertilized with the pollen from another and different flower situated perhaps somewhere on the same plant, but more often on a different plant even some distance away. There are different methods by which plants prevent self-pollination, but it would be impossible to discuss them within the limits of this paper.

Many careful investigators have studied the sterility and fertility of our common orchard fruits and have gathered much definite and conclusive data on the problem so that we now know just about what varieties of apples, pears, plums, et al., are self-sterile and need to be cross-fertilized in order to develop fruit normal in size, quality and quantity. We shall content ourselves with simply a brief summary of the results of a few of the different investigators.

M. B. Waite, one of the earliest investigators of the self-fertility and self-sterility of pears, found that Angouleme, Buffum and Flemish Beauty are reasonably self-sterile; that Bosc, Seckel and Bartlett were partially self-sterile; and that Anjou, Clairgeau, Clapp's Favorite, Keiffer, Lawrence and Sheldon were self-sterile, or so nearly so as to necessitate cross-fertilization in order to produce a crop. Out of all the varieties studied, over half were self-sterile. Fletcher found in his investigations that Keiffer and Bartlett are so self-sterile that each needed to be cross-fertilized. Bartlett seems to vary somewhat in individual trees, but in general it seems to be largely self-sterile.

Waugh's work with plums demonstrated that 55 native varieties of this fruit were self-sterile and at least five varieties of Japanese plums demand cross-fertilization. He also showed that Ben Davis, Rhode Island Greening, King, Spy, Roxbury Russet and other common varieties of apples were self-sterile, while Baldwin, Esopus and Fameuse were only partially self-fertile.

Lewis and Vincent, of the Oregon Experiment Station, have shown in their extensive tests of many apples that 59 varieties are self-sterile, 13 only partially self-fertile, while but 15 varieties are wholly self-fertile.

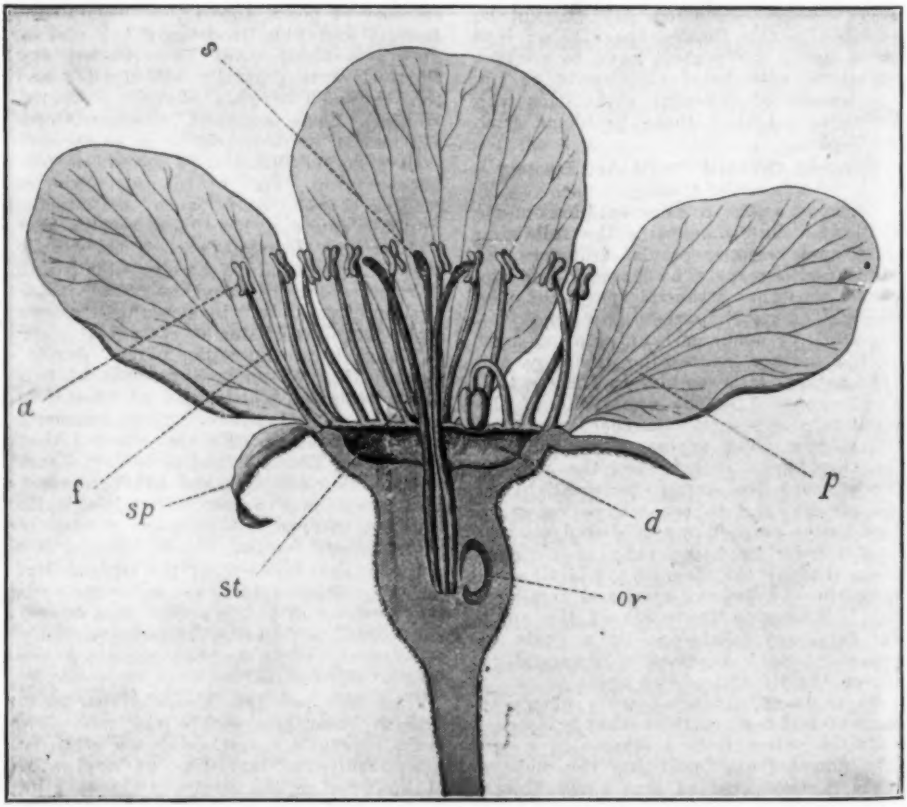
Karl Sax, of the Maine Experiment Station, who has within the past few years carefully investigated the sterility relationships of varieties of apples in Maine, sums up the results of his work by saying: "For practical purposes all commercial varieties of apples grown extensively in Maine are self-sterile and must be pollinated with pollen of compatibile varieties to set a normal crop." Without multiplying examples or giving further results of careful and dependable

investigators which are available, it seems safe to say that most of our common commercial varieties of apples and pears, many varieties of plums, and some varieties of cherries, at least the sweet ones, need to be cross-pollinated in order to set a normal crop. It remains then to determine what agent in nature brings about cross-pollination of the common orchard fruits.

What Agent Performs Pollination?

There are two active agents in nature that may bring about cross-pollination of plants, namely: (1) wind and (2) insects. Generally speaking, those plants that are cross-pollinated by the wind possess flowers which are inconspicuously colored, and which have a great abundance of dry light pollen that can be blown about from place to place. On the other hand, those plants that are cross-pollinated by insects have brightly colored flowers with moist sticky pollen that must be carried from one flower to another by some active living agent.

Studies have been made to determine whether wind does carry the pollen of fruit trees. Small glass slips smeared with vaseline, for example, have been placed at different distances from apple trees and plum trees, and at different height from the ground, to see if pollen from these trees would fall on them. If grains or masses of the pollen should be found on the pieces of glass after 24 hours, then one would have to conclude that the wind is able to carry the moist sticky pollen of these fruit trees. At the end of 24 hours in these experiments, some of the slips bore no pollen, while some bore a few grains, the highest in any instance among the apple trees being one which bore 16 grains but was only 4 feet from a tree. It is fairly evident from these investigations that the wind does not carry the pollen of orchard fruits to any



Enlarged section of the flower of a Bartlett pear; sp, sepal, the five sepals form the calyx or cup; p, petal, the five petals form the corolla or crown; the stamens consist of two parts; f, the filament or threadlike stem, and a, the anther, composed of two sacs which contain the pollen; the pistils consist of three parts, ov, the ovary; st, the style, and s, the stigma; d, the disc in which the nectar is secreted. Pollination is the transfer of the pollen to the rough sticky surface of the stigma. The pollen grains send out slender tubes, which pass down through the style to the ovules. From the end of a tube a sperm cell passes into an ovule and unites with an egg cell—this is fertilization.—(After Waite.)

appreciable extent. If a glass slip 3 inches long and 1 inch wide, set 4 feet from an apple tree, catches but 16 grains of pollen, it is hardly to be supposed that the end of a pistil, not as large as a pin head, would catch much pollen.

Again, self-fertile plum trees have been inclosed in coarse-mesh muslin to prevent the visits of insects, yet not to shut out the wind nor to prevent it from transporting pollen. Such trees, however, bore either no fruit at all or only one or two fruits, while neighboring trees of the same variety bore normal crops. Thus we are forced to conclude that wind does not, indeed probably can not, cross-pollinate the common orchard fruits. There remains, then, the other agent, insects, which we may now consider.

Insects as Agents of Cross-pollination

Any one visiting an orchard of fruit trees in bloom can not fail to be impressed with the large numbers of insects that are present among the blossoms, at least if the day is bright and sunny. The most numerous insect visitors will generally be the various species of bees, notably honeybees if the latter are in visiting distance of the trees. Counts of insect visitors to blossoming fruit trees have been made by different observers, and the results substantiate the foregoing statement. It appears when one considers all of the evidence, that insects are absolutely essential in transmitting pollen from one flower to another and are therefore necessary to the cross-pollination of orchard fruits and the successful production of crops.

The Honeybee as a Cross-pollinator of Fruit Blossoms

The experiments of A. H. Hendrickson in demonstrating the function of the honeybee as an agent in prune pollination are noteworthy and convincing. Two double tents of muslin were erected, each tent covering two trees, one a French prune and the other an Imperial prune. The tents were placed over the trees before any of the flower buds had opened, in time to exclude all insects that might attempt to visit the trees when they came into bloom. When the trees began blooming a colony of bees was placed under one tent, but no bees or other insects were allowed to enter the other tent. The colony was allowed to remain beneath the tent enclosing the two prune trees for a period of six days, when it was removed. During this time the bees had visited the blossoms of the two trees and had gone back and forth from one tree to the other probably many times. The tent over each pair of trees was not taken down until sometime later (after all of the blossoms had fallen) in order to be sure that no other insects might visit the flowers. The results are exceedingly interesting.

The French prune tree enclosed with the Imperial prune tree and bees set 15.5% of its fruit, a very heavy crop. The French prune tree enclosed with an Imperial tree, but without any bees, set only .43% of its fruit, less than ½ of 1 per cent of a crop. The average set of French prunes near-by in an orchard in which colonies of bees were placed was 13.2%. Probably the orchard set would not have been as high if it had not been for the bees in the orchard.

The Imperial prune tree under the tent with bees and a French tree set 7.9% of fruit, while the Imperial tree under the tent from which bees were excluded set only .34% of fruit. Here, again, the tree which was not pollinated by the bees set almost no fruit.

In these experiments a tent was also placed over a single French tree and over a single Imperial tree and a colony of bees included in each. The French tree with the bees set 19% of the fruit, a very heavy crop. Probably this high set of fruit was due to the fact that, owing to the large number of bees under the tent, each blossom was visited over and over, thus insuring a thorough pollination of each flower. The Imperial tree with the bees set 3.02% of fruit, not one-half as much as the Imperial tree inclosed in the tent with the French tree and the bees. The flowers of this single tree in the tent with the bees must have been well pollinated with their own pollen, for the bees worked actively over the tree, visiting the different flowers probably several times. This experiment appears to show that the Imperial tree does best in the production of fruit when its flowers are cross-pollinated with the pollen from some other variety.

It would appear from these experiments that an insect is indispensable in pollinating and cross-pollinating prunes, and that the honeybee can do the job to perfection.

The question naturally arises, what insects are most abundant and active in fruit orchards when the latter are in bloom? It is a fact that the native wild species of bees and wasps, and other species that may visit blossoms for nectar, are likely to be rather scarce in the spring when fruit trees are in bloom. Great numbers of wild insects die during the winter and comparatively few of them are alive and active at the blooming period of fruit trees. For example, all of the individuals of a nest of bumblebees, except the few new queens, die in the autumn, and only the half dozen new queens in the colony survive the

winter. Bumblebees are always scarce at the time fruit trees are in bloom, and I suppose this is the reason clover seed is not produced in the first crop of clover—because there are not enough bumblebees to cross-pollinate the flowers. The wild insects, then, that commonly visit the flowers of orchard fruits are likely to be reduced in numbers by winter conditions and may be so scarce at the blooming time of fruit trees that there will not be enough individuals to pollinate a sufficient percentage of the flowers to produce a normal crop. On the other hand, the honeybee, which is under the control of man, is carried through the winter in large numbers concentrated in certain domiciles, namely, the hives, any number of which may be placed in a given area of orchard trees. Thus honeybees can be distributed in an orchard in large numbers at the time the trees are in bloom, and it is the only insect with which this can be done. Moreover, the honeybee is a very active, industrious insect, visiting many flowers and doing so day after day, for it is a gatherer of food for the colony, not for just itself alone. Our knowledge of the habits and activities of worker honeybees indicates that they are the most efficient agents in the pollination and cross-pollination of orchard fruits if they are present in an orchard, or are in close poximity to it. This being true, then, all one has to do, barring unfavorable weather, to insure the proper pollination of his orchard trees and the set of a fine cop of fruit, is to place the proper number of colonies of honeybees, perhaps one or two to the acre, in his orchard. Many growers of New York State and of California are coming to realize this and are getting colonies of their own to place in their orchards, or in some cases are hiring beekeepers to place colonies in their orchards.

Ithaca, N. Y.

BEES DESTROYED BY DUSTING

By H. M. Myers

Colonies Depleted by Drifting of Arsenical Dust to Distant Bloom in Dusting Orchard and Field Crops

The dusting system of applying insecticides and fungicides to orchard, vineyard and field crops for the control of insect pests and fungus diseases, while not nearly as efficient as liquid spraying, is becoming more extensively practiced each year. There are two major reasons for this increasing practice. First, it takes less than half the time to dust a given area that it does to cover with a liquid-spraying outfit. Though much more expensive in the amount of materials used, the time saved strongly appeals to the fruit-grower who has large areas to cover. Second, many fruit farms do not have an adequate supply of water during the entire spraying season. On such farms the dusting machine seems to be the only thing available.

These two advantages, together with the high-powered sales methods employed by the manufacturers of dusting materials and machines, indicate that the system will endure for some time to come.

The materials for dusting are ground very fine with special machinery and mixed with special carriers to make it as light as possible. This is applied with a blower usually driven by a five-horsepower engine which gives it a terrific force as it leaves the end of the flexible hose, which carries it far above the trees, so that when viewed from a distance one is impressed as by a great fire giving off huge clouds of white smoke.

Poison Carried to Distant Nectar-bearing Plants.

This light smoke-like dust, containing its deadly arsenic, is caught by the winds and drifts for miles, covering everything in its path. It is this drifting and covering of plants and trees for which it is not intended, that causes the chief damage to beekeeping.

Although the drifting has been distinctly traced for upwards of two miles, my own observations incline me to the belief that most of the poisoning of bees occurs within a mile of where the broadcasting is done, as farther out the dust is so thinly disseminated that but little damage is likely to occur.

Important Sources of Damage

Many of the orchards of New York are of mixed settings. It is not uncommon to see a block containing several varieties of apples, cherries, peaches, pears and quinces, all having different blossoming periods, and all within range of drifting dust from one to the others; and where each of these receives an application of dust at the proper time for the control of pests, the others are subjected to it while the bees are working on them.

Cover crops, near-by clover fields, pastures, buckwheat fields, dandelions and other nectar or pollen producing plants are continually in danger of receiving an application of wind-driven dust laden

with death-dealing arsenic, nicotin and other poisons.

Quinces and horse-chestnuts, both being late bloomers, are special sources of trouble, as bees are usually working them heavily when the calyx application is made to many of the winter varieties of apples.

The Effect on the Bees

Personally I am saitsfied that the bee obtains the poison in both nectar and pollen. I am not sure that it may not be stored with nectar in the hive in some cases, but doubt if ever in amounts sufficient to injure human beings who might consume the honey. The very fine dust particles, some observers believe, are gathered as pollen by the bees. The work done in western New York during the summer of 1923 by Prof. Willson and Geo. Rae proved beyond doubt, at least in some cases, that the pollen taken from hives badly affected had a high arsenic content. We understand no analyses were made to determine whether or not other poisons were present in either the bees or pollen, but undoubtedly nicotin also plays its part.

Arsenic poison results in a slow death, and bees are continually dying all the way from the source of the poison to the hive, and even after falling to the ground they continue to crawl. Near the apiary they are usually found collected in small bunches, trembling and shivering in their agony—a sight that a beekeeper will never forget.

Where the source of trouble is at a considerable distance from the apiary, only part of the colonies may be affected, and most of the poisoned bees will die before reaching home, resulting in but little poisoned pollen or honey being stored in the hive. All that is noticed in such cases is a sudden disappearance of the field force, and if the colonies have plenty of nurse bees and brood, together with sufficient stores, they will make a speedy recovery, but the prospects of a surplus honey crop have disappeared.

When the source of trouble is nearer the apiary the effect is correspondingly worse. The poison is carried into the hive with the resultant poisoning of nurse bees, brood and queen. I have seen hives with upwards of two quarts of dead and dying bees piled on the alighting board, and brood within that looked as though it had every kind of disease listed in the A B C and X Y Z of Bee Culture, and a half a dozen others besides. It is always difficult to differentiate between diseased and poisoned brood, which complicates the matter of disease control very much.

Extent of Damage to the Beekeeping Industry

The financial loss to New York beekeepers from spray and dusting poisoning is beyond estimation, but that the figure would be staggering, if known, is easily conceivable. During the year of 1923 we lost 70 colonies outright, and the working force from 110 others, making a total loss of crop from 180 colonies. This was in a year when our yards that were not affected with poisoning gave us a return of 200 pounds of surplus honey per colony. Figuring our loss of crop from the 180 colonies at the same rate, and the honey at 10c per pound, gives us a loss of $3600 for the season of 1923, to say nothing of the loss of the 70 colonies of bees. What was the probable loss through the state? Ours was not an exceptional case.

Suggestions of Remedial Measures

It is not likely that the remedy lies in one answer, but rather in results of endeavor carried along several different lines, a few of which I suggest:

1. Education of entomologists and orchardists to a better understanding of the economic value of bees, to the end that the honeybee may be considered whenever a recommendation for an application of poison is to be made by the entomologist, and the acceptance of the recommendation by the orchardist.

2. A more determined resistance on the part of the beekeeper against being ignored and annihilated, and an insistence that his rights be respected. Surely no one industry has a moral right to destroy another needlessly.

3. We need experimental work to discover, if possible, a cheap, efficient repellant that can be used with either dust or liquid spray. That would keep the bees away from the objects that have been covered. If such a repellant is discovered and found practical, legislation would be necessary to compel its use by orchardists.

4. Legislation controlling the use of poisoned dust and holding the user responsible for any poisoning of bees or other live stock that might occur caused by either applied or drifting dust poison, making the application of poisoned dust where it would be liable to drift on to some other plant from which poisoning of bees might occur sufficient evidence for judgment.

5. The selection of cover crops for orchard use which will not bloom, or on which bees are not working at times when it is necessary to spray the orchard, or possibly plants whose blossoms will not readily gather any of the floating dust.

Ransomville, N. Y.

FROM THE FIELD OF EXPERIENCE

BULK COMB-HONEY PRODUCTION

A System of Management that Prevents Swarming in Southern Localities

The first thing to be considered is the kind of hive to use. Most supply dealers, as well as a large number of beemen, recommend the use of the ten-frame hive. The ten-frame hive is a mighty good hive. I know, because we have used it. But my object here will be to tell how we produce the largest amount of honey and yet cut all unnecessary labor and colony manipulation. We have tried three different kinds of hives, and have chosen the eight-frame Langstroth because we think it the best for this part of the southwest.

We will suppose the honey crop will average between fifty and seventy pounds per colony. This will require a two-and-one-half-story eight-frame hive for each colony; that is, two full-depth bodies and a half-depth super with extracting frames.

If we expect to produce a crop of honey, we must have plenty of bees. The main thing we want is bees whose queens are heavy layers and yet not bad to swarm. I believe, all things considered, the three-banded Italians will come the nearest to filling the bill. If we can have all colonies headed with a good three-banded queen less than a year old at the opening of spring, we are already far along the road toward a good honey crop.

The first examination in the spring is to take place just as soon after the queens begin laying as the weather will permit. At this time all that is necessary is to see that each colony has at least twenty-five pounds of sealed honey, and to see that all colonies are queen-right. All colonies short on honey should be fed enough thick sugar syrup to bring it up to the desired weight. If, for some reason or other, any colonies have lost their queen during the broodless period, they should be united with queen-right colonies. Each time we go over the yard, we want to be sure that every colony has plenty of honey to last it until the next examination.

If the bees have wintered well and the spring weather is not too cold, most colonies should have the first story, or winter nest, filled with brood in from six to ten weeks after they begin work. As soon as they begin to show a crowded condition, the second story is to be added and two or three frames of brood are drawn from the lower story and placed above, filling the empty spaces with combs or frames of foundation, whichever the case may be, from the top story. Our object in raising the brood to the upper story is to relieve a congested brood-nest, as well as to induce the queen to occupy both stories, thus affording her an abundance of room to lay to her fullest capacity, and yet with little desire to swarm. On our next round, probably

Equipment for bulk comb-honey production. The full-depth extracting super is "loaned" to the queen during spring brood-rearing but later it is filled with honey to be extracted. The shallow extracting super is for bulk comb honey.

we will find some queens that for some reason or other have failed to enter the second story. In such cases, if the queen still has the lower story crowded with brood, the first operation is to be repeated. If we can get the queens to fill both stories with brood by the time the main honey flow opens, we will have a very large force of "harvest hands," and yet little trouble about swarming.

At the opening of the honey flow each colony is worked over and all the oldest brood put in the upper story. The combs containing the young brood, as well as those containing large amounts of pollen, with the queen, are placed in the lower story. From now on the queen is to be confined to the lower story by an excluder. Between the two stories and above the excluder, the half-depth super, with frames of foundation, is placed. As fast as the brood in the upper story emerges, the bees will fill the combs with honey, as well as filling the shallow super with new comb and honey, which is

to be cut out and placed in the containers. The honey in the upper story is extracted and poured over the comb to bring the contents of the container up to the desired weight. Thus you have saved two-thirds of the comb and at the same time your honey goes on the market

Corner of queen-rearing yard which supplies queens to replace all poor ones in the honey-producing colonies.

as comb honey. When bees are run in this way, they produce almost as much as they would if the honey was all extracted. Eugene Holloway.

Marietta, Okla.

SURPLUS HONEY FROM TULIP TREES

How to Have Colonies Strong in Time for this Early Honey Flow

In getting the bees ready for the tulip-tree honey flow, I like to have my colonies as strong as I can get them. I have heard of colonies getting too strong, but never saw one. The queen must begin laying early enough to have two brood-chambers well filled with bees and brood by the beginning of the last week of April, that being the earliest I have ever known the tulip tree to bloom here. It is usually later than that, but it is better to be ready too early than too late. My record of last year shows that I saw the first bloom the second day of May. One can know when the tulip-honey flow is on by going to the hives just before daylight. Bees will be found running up and down the front of the hive as though they could not wait. At the first peep of light they will be singing off through the air like bullets, and by full sunrise they will be pouring from the entrance in a living stream. The entrance should be large.

It is now time to take off one of the brood-chambers and put on the supers. There is such a large force of bees that they must go into the supers to find room, and they usually, but not always, go to work on the foundation, for with every tulip tree working like an open feeder, and no room in the brood-chamber, they must prepare a place for the incoming nectar in the supers.

At this stage of the game, the beekeeper must keep one eye on the supers and the other on the brood-chamber, because the honey flow is very rapid and the bees must not run short on super room. Swarming must be kept down if a full crop of honey is to be secured. An old fellow who keeps his bees in box hives told me that if I did not let my bees swarm I would "run plumb-out'en bees"; but I haven't had a swarm in six years, and still have a few colonies left.

The frames of brood that are taken off can be used any way the beekeeper thinks best. If there are no colonies that need it, the best thing I know to do with it is to select a few of the weakest colonies and pile the brood on them. As the brood emerges the combs will be filled with honey, which can be extracted or sold in bulk. However, such frames of honey are the best thing I know of when bees are short of stores in the spring. I call the colonies used this way brood piles. They are not bad swarmers.

Greenville, Tenn. R. Broyles.

EQUALIZING COLONIES IN SPRING

How this Can be Done Without Opening Any of the Hives

For years I have wintered my bees in a low shed opening to the south, having a floor 10 inches above ground and packed underneath with straw. Sides, back and roof are made wind and snow proof. Into this I pack the hives three or four tiers deep, well insulated on all sides, above and between with rags, waste or anything that is a non-conductor.

The fronts of the hives are always open to the winter sun, and the bees can fly out any time the weather permits. This has proved a success every winter.

In the spring when warm days begin to inspire activity among the bees, I find that about one-third of the colonies have more bees than they need and they consume honey stores rapidly. Two-thirds have at least plenty of bees and also plenty of stores for spring breeding, while about one-third have more honey than necessary, but are shy on bees.

So to equalize these conditions is of great advantage. I begin by pulling out an occasional hive in which the bees have perished. After cleaning out the combs and putting those hives out of the way, I go along the rows of hives, pull out the strongest ones and carry them to

their summer stands. If light on stores, I place another hive of honey on top instead of feeding or disturbing the brood-nest. These I wrap up carefully to shield them from raw winds and late storms.

As might be expected, many bees drift back and after flying around the rest of the day in search of their old homes, at night they gradually slip into other hives. No fighting results, inasmuch as a weak swarm will not resent the intrusion and the strangers are rendered timid by anxiety as to their own fate.

This method at once puts weaker colonies in condition to build up to normal strength in short order if they have good queens. The newcomers will not attempt robbing because, if they fill up with honey, they have no place else to take it, so there is nothing to do but replace it.

Meanwhile the old colonies that were removed are not seriously weakened, since they have much brood started and will not desert it in sufficient numbers to jeopardize the young. Thus the strong are checked in brood-rearing at a time when this would have been overdone, while on the other hand the weak swarms are stimulated in this regard. I test out every colony to see that each has enough honey to last till the dandelions open. If any seem short of stores, I give a super of honey, as stated.

This may not be "orthodox," but the system works very satisfactorily and never fails. That is all I have to offer to recommend it. I have restored many a weak colony in this way and put it on an early working basis. A little later I remove gradually the remaining colonies from winter quarters and no bees are ultimately lost by drifting. I also then give all the strongest colonies a second story containing combs and honey, if I have any, in order to make brood room as other writers have recently described.

Davis, S. D. I. W. Cameron.

PROTECTION FOR BEES IN SPRING

A Light Case for Protecting Cellar-Wintered Bees During the Uncertain Weather of Spring

A serious drawback to cellar wintering, and also to some extent with chaff packing, is that when the winter protection is removed in the spring by the act of setting the hives out of the cellar, or in unpacking the winter cases, there is no adequate spring protection in a single-walled hive during the frosty nights of spring. This locality is more or less subject to frosty weather up to May 20 or later; and when two or three weeks of warm weather are followed by a cold snap, as quite frequently happens in April and May, brood in outside combs is chilled so as to arrest the colony growth, and in some instances the loss is so severe as to cause "spring-dwindling."

I have spent some time this winter trying to devise a case with the following qualities: A case light and portable enough to be easily set over and off from a hive, and at the same time strong enough to withstand winds and handling; a case made of material that is a good non-conductor of heat and not too expensive; a case having a minimum number of joints to keep tight. It would seem that such a case would afford almost ideal spring protection and, in some localities, might give ample winter protection as well.

The case that I have in mind is 20¼" long by 16½" wide by 24" high, inside measure, and will fit over a two-story 10-frame Standard hive, provided that both hive and case are accurately made.

The principal materials required are five sheets of Celotex of the following dimensions: Top sheet, 18 x 24"; each side sheet, 21¼ x 24"; back-end sheet, 16½ x 24"; front-end sheet, 16½ x 22½". This requires about 16 square feet of Celotex, weighing 10 pounds and costing about $1.00. As Celotex is only $\frac{7}{16}$" thick and is softer than wood, it seems advisable to reinforce the corners of the case with wood corner-posts on the outside, and also a wood strip near each end of top sheet, which is nailed to both end sheets and top sheet. Also the regular bottom-board of the hive requires the addition of three small strips of wood nailed around outside of rim ⅞" below top edge of the rim; this is to support the case when set over the hive. In order to make the joints air tight, strips of paper can be pasted inside over the joints. Although the manufacturers of Celotex claim that it is weather-proof, I believe it advisable to cover the top either with asphalt roofing paint or with a sheet of roofing felt.

As it is seldom advisable to adopt any new thing on a large scale until it has been tested on a small scale, it might be well to try out only a few cases the first season. We know that Celotex is a very excellent non-conductor, and that it is light in weight; but we are not yet sure how durable it will prove when exposed to weather.

Celotex is a fiber-board made from sugar cane stalks after the sugar is extracted. It sells at some lumber yards at $65 per thousand feet, and comes in sheets 4 feet wide and 8 to 12 feet long, and weighs about 600 pounds per thousand feet. A. N. Clark.

Charlotte, Mich.

SIFTINGS

by J. E. Crane

A. V. Small says (page 177): "In handling bees one should have three definite objects in view, namely: to build up the colonies in spring, to secure a crop of honey, and to prepare the bees for winter. All very simple, surely.

* * *

It is surprising to read on page 149 what can be done with package bees on comb foundation in some localities and seasons. But let us remember that this is where the season is long and honey very abundant. Such success can not be expected where our main dependence is white and alsike clover.

* * *

From the space given to Hubam and sweet clover in March Gleanings, it seems evident the interest in this plant is on the increase. It appears to be most valuable both as a forage plant and for honey in the northwest. Those states we have thought to be so bleak and forbidding will, within a few years, flow with milk and honey.

* * *

Mr. Pettit criticizes the manufacturers of beekeepers' supplies for their waste of lumber and the cost to beekeepers of hives and frames. I suppose those who manufacture hives want their goods to look as well as those of others who manufacture the same class of goods, and of course a knot would bring disgrace to them.

* * *

To save on the cost of hives, frames and other parts we have come to make them ourselves, and while they do not look as well as those made in a factory, the bees make no complaints. New England conditions are such that we have to figure close to secure a profit. President Coolidge was born a few miles from here, and he well knows the value of economy.

* * *

Harry Lathrop, on page 170, proposes a new way to solve the foul-brood problem, by destroying all infected colonies in the fall and disinfecting all hives and combs or melting them, then in the spring build up with package bees. Certainly a good way if you wish to keep your hives full, but every colony having American foul brood should be destroyed in the fall. While at Moses Quinby's fifty-five years ago last fall, I was informed that a hive containing but one cell of foul brood was broken up as unfit to winter.

R. F. Holtermann's article, commencing on page 154, on "Beekeeping in Quebec," is quite surprising. Although living close by this province all my life, I had little idea of the extent of the industry or the success of the beekeepers. Their winters are long and cold and the summers short, but there are compensations that make up and help them out. The grant of $43,000 by the government for the development of the industry is certainly generous and most helpful.

* * *

Mr. Pettit has something to say in his article commencing on page 146, and he says it without fear of or favor to any one. He finds the Langstroth frame large enough and deep enough to produce strong colonies, as well as deeper frames. He would space one and one-half inches apart, the same as we have done for fifty years. He uses a thin top-bar and a plain end-bar for his frames, to save expense. I believe he is right. What is the use of having a ⅞" top-bar when a ⅝" one is enough to keep it from sagging?

* * *

The Washburn-Crosby Co. put out in small packages what they call "Gold Medal Pancake Flour," a nice article. Of course, the reading matter on the outside of the package extols the quality of the flour and gives directions for baking, after which we are told that the cakes should be "served with butter and syrup or honey." Good! But we would like it a little better if they had said "honey or syrup." However, we will let it go as it is. It would be a fine thing if all the different brands of pancake flour and other cereals to be served with sweets would mention honey.

* * *

A good deal of space is taken in March Gleanings, both in the reading pages and in the advertisements, with the matter of package bees. It is getting to be a live subject. While packages of bees with queens have, in the hands of careful apiarists, proved of great value in establishing new colonies or apiaries, yet it has seemed to me that, as the editor suggests on page 143, their value has not been appreciated for building up the weak colonies in our northern yards. We almost always have in spring more or fewer weak colonies with good queens but too few bees to build up in season for the clover harvest. A pound of bees given them in late April or early May would give us many pounds of honey later.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California—No rain of any consequence has fallen in our part of the state since our last letter, and to say that things are getting dry is putting it mildly. Black sage made a good start (about two inches) early in January, but has made very little growth since. The wild buckwheat responds quickly to moisture and would yield some honey if we have late rains. White sage honey is practically out of the question for this year, on our ranges. Alfilerilla, which usually gives the bees a good start in January and February, shows scarcely any bloom at all.

The weather has moderated considerably the past month and the days are warm to almost hot, leaving nothing to be desired but moisture to make every one smile.

Few beekeepers are optimistic about the prospects for a honey crop in southern California this season. While there is still a chance of making some honey, most of us feel that the chances of making anything like a crop are gone. Of course, there are exceptions. There are the men who always have their bees ready, and by moving first to the oranges and then to the alfalfa, sweet clover or star thistle make honey when there is any to be made. This seems like a season of wait and hope with the old timers, who in many cases have kept bees on the same locations for twenty and even thirty years. Their reasoning is too often like this: "What's the use of going through the bees and disturbing them? It will only cause them to eat a lot of their stores, and if we are not going to get any rain they are better off let alone. If it rains, we'll get some honey; but I don't think it's going to rain. Do you?" And meantime they have forgotten that the oranges and alfalfa will bloom, and that the irrigated sections will furnish many kinds of flora. If the bees are in good condition, undoubtedly some honey can be gathered.

The demand for white honey is still good, the price being about 14 cents. Light amber buckwheat is moving slowly at 11 cents. The beeswax market is strong and there seems to be a good demand at from two to five cents above what was being offered a few weeks ago.

The proposed new bee-law seems to have met so much opposition that it may never get out of committee. The time between the drafting of the bill and presenting it to the legislature was rather short to be able to get it properly presented to all of the beekeepers of the state and have them thoroughly understand its merits. L. L. Andrews.

Corona, Calif.

* * *

In Texas—January was dry, with only .31 of an inch of rainfall, and now February passes us by with only two showers that did not leave water enough to measure in the guage. As yet there is but little activity among the bees. Brood-rearing is as far advanced as the conditions will allow. Many beekeepers, ignoring the fact that the honey-plants are as backward as the bees, are stimulating their bees by the use of feed and supposed pollen-substitutes. The only result so far is the heavy consumption of honey in the stimulated colonies. The feed causes the bees to try their hardest, but the constantly recurring temperature of 32 degrees does not allow the brood-nest to expand. As we have often said, Texas is the "too" state. For three months it has been too dry and probably next month will be too wet.

The condition of the honey-plants is bad. Horsemint probably will give little surplus this year. In damp locations some few plants are showing, but over the large areas which furnish the surplus not a single plant can be found. Few of the early annuals that furnish pollen and nectar for brood-rearing are showing. These conditions limit the prospects for a honey crop to the deep-rooted perennials. Huajillo, catsclaw, Mexican persimmon and guaiacum have been so retarded by cold and drought that if they bloom it will be after all danger from frost is over. The above plants, together with mesquite, should give a bloom this year if the observations of the old-timers are correct. These observations have much in their favor, as a correlation of honey-production data with that of weather conditions shows a heavy yield from huajillo and mesquite in years preceded by dry winters and springs. No beekeeper should slight his bees now. Just because the prospect is poor, get your bees ready for a honey crop. If the nectar yield does not come you will have saved your bees. If it does come you will be ready for it. A change in weather conditions which may occur in a half hour's time may change failure to plenty.

Every beekeeper should plan to save every ounce of wax this summer. It does not take long to save a pound of wax when you are cleaning hives or working colonies. The loss from wax wasted in

discarding old combs and cleanings from hives and frames is one of the bad leaks in beekeeping.

W. E. Joor, of Dallas, visited southwestern Texas this month and reports the bees and beekeepers in good condition.

C. E. Rude, chief foul-brood inspector, and a force of men are working the Valley, inspecting queen-yards.

San Antonio, Tex. H. B. Parks.

* * *

In Iowa

We have had an ideal winter for cellar-wintered bees. The weather has been snug enough so that the temperature of the cellar was such that the bees were very quiet, which is a good indication that they will come out in good condition.

However, the bees that have had to winter outside with little or no protection will likely be in poor condition, as the weather has been too cold, and for such a long period, that unprotected bees have suffered very materially, as they had no opportunity for flight until in February.

When putting out cellar-wintered colonies I want that first flight day to be warm enough so there will be as little loss as possible. That means a day warm enough so that the bees can leave the hive any time during the day and be sure of getting back. It is foolish to take the best of care of the bees during the winter and then put them out on a day when many will be chilled at a time when every bee is needed perhaps more than at any other time during the season. We have seen this done at a very great loss when it could have been avoided by a little better reasoning.

Honey has been moving very slowly the past two months. Taking the year as a whole, the market and demand have been peculiar. We never shipped as much honey in late summer before as we did the past year, unless it was in 1919. The demand was very good up until about January, when it seemed to drop off suddenly. We expect things to take a little different turn soon, as the canned fruit will be running short.

Beekeepers are now confronted with another new competitor in refined corn sugar. Heretofore this product of the glucose factories has been handled in a different form, there having been no way devised previously to refine it and place it on the market in a form similar to other sugar. I learned quite a little about this new sugar last fall at the plant of Penick & Ford Company, of Cedar Rapids, Ia. One of their employes showed me around the plant and was kind enough to answer questions I wished to ask. At that time their new refining plant was being built, and I presume by this time is in operation.

This sugar, before refining, comes from the corn molded into large cakes, quite white, and not as sweet as it looks. Its texture is more like flour, lacking any grain at all, and its taste in that form is everything but pleasant. Heretofore this product has been sold to candy, soft-drink and booze manufacturers, and I understand it has bothered the companies to dispose of all their corn sugar in this manner. I am informed that this sugar, when refined, makes a sugar as good in every way as any other, but time and experience will tell. If this is true, it will likely lessen the demand for cane and beet sugar and lower the price of sugar in general, which will, of course, have some effect on honey. Just how much remains to be seen, but it is at least another competitor. W. S. Pangburn.

Center Junction, Iowa.

* * *

In North Carolina

The outlook in this state —Coastal, Piedmont and mountain regions—is the best in a long while, for a really good honey season. Of course, there is still the possibility of late-frost damage to the honey-plants, but the indications are that they will get by all right, as the spring is really late and the likelihood of late killing frosts that would injure the honey flow is now remote. The bees are now working the maple and some other of the earlier bloom, including huckleberry. Brood-rearing is under way in increasing volume. The fruit bloom is just beginning, and within a week (about March 15) this bloom will be receiving the almost undivided attention of the bees wherever it is available, as they practically abandon all other bloom when this opens.

The honey flows just now are almost wholly absorbed in the stimulation of brood-rearing in preparation for the main flows from gums, holly and the like, which occur in April and run into May, constituting our finest honey-yielders.

Interest in bees and honey seems to continue well in this state, and beekeepers generally are taking care to get in their supplies and have their supers and other equipment ready as the season advances.

Last year's crop seems to be pretty well absorbed, and the output appears to be more and more surely taking care of the needs of the North Carolina market. Then, too, the home people are more and more coming to appreciate the home product and the home flavors of honey, so that dealers are buying very freely from the home producers as they are coming

to give more careful attention to putting out attractive packages.

The Bee Culture Division of the State College is pressing its work of co-operation with beekeepers in furthering the application of best methods in beekeeping, and the results are very marked in all parts of the state. There is a correspondence course provided by the college, in addition to the "personal contact" work of C. L. Sams, the bee specialist, who travels by automobile into all parts of the state, co-operating with the county agents in lecturing, and demonstrating approved methods.

Wilmington, N. C. W. J. Martin.

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In Indiana—Colonies in this locality are, in many cases, short of stores, and a considerable number of those wintered outside have already perished. Bees in cellars apparently are in prime condition where the cellars are properly constructed with suitable insulation. Clover prospects are good, but, of course, the crop will depend upon the amount of spring rainfall and the weather conditions during the honey flow.

About twenty honey-producers from several counties in northwestern Indiana met recently and organized for the purpose of working out a better system of marketing, with a view to stabilizing prices. An executive committee of five members was elected. The committee will make an intensive study of marketing conditions, and will prepare and send out from time to time to all beekeepers within the territory a multigraphed letter quoting wholesale, jobbing and retail prices, as well as information concerning proper grading and handling of honey, and such other information as may be deemed desirable. It is also proposed to carry on a campaign of local advertising, to see that all retail dealers are supplied constantly with honey throughout the year, and to render mutual assistance in disposing of surplus honey belonging to members. Arrangements will be made to take over bees and equipment of members who through misfortune or for other reasons are compelled to dispose of their property. Much enthusiasm was manifested and nearly all present signed up as members. The next meeting will be held in another county and we believe that a considerable number will then be added to the membership. It is aimed to bring in all producers of honey, including those who do not read bee journals and who have not heretofore taken an interest in beekeepers' associations. The organization has been named the Northwestern Indiana Honey Producers. J. M. Mundell, of Hobart, was elected secretary and the writer, president.

A recent survey of about 50 retail grocery stores in Gary, an Indiana city of about 50,000 people, discloses the fact that practically all are selling either comb honey or extracted honey in glass jars. Apparently no honey is being offered in pails through the stores, although canvassers have worked the streets for years. The same conditions prevail in other suburbs of Chicago. In several other cities and towns further away from this center of population, where honey in pails has been advertised, nearly all leading grocers carry 5-pound pails, and the demand is greater than for comb honey or bottled honey.

Valparaiso, Ind. E. S. Miller.

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In Ohio—The annual meeting of the Ohio Beekeepers' Association, held at Columbus during Farmers' week, was the best and largest meeting of this association ever held. The speakers included some of the largest and most successful beekeepers in the United States, and the program was interesting from beginning to end. The success of this meeting was largely due to the efforts of our live secretary, Miss Florence Nail. The field meeting of this association will probably be held at Delphos some time in August.

Thus far the winter in northwestern Ohio has been very favorable for the bees. Although it was severely cold at times, there have been few sudden changes. Bees had splendid flights on February 5 and 6, which was very helpful to outdoor-wintered colonies. The bees generally came through the winter in good condition. We have but one colony dead so far in our ten apiaries of more than 700 colonies, which we consider very good. Although the winter is not over, we feel reasonably safe in saying that colonies which have ample stores and some protection are fairly safe.

We have just returned from quite a trip through the country and noted that the clovers look good at present, and if weather conditions remain favorable through March we shall look for a good honey year for the season of 1925. We have had two poor honey years in succession.

Some beekeepers have become very much discouraged and some have gone into some other line of work. With the outlook for a greater demand and better prices for honey, the commercial beekeeper may well look forward to the future with brighter prospects.

One of our large beekeepers shipped 300 colonies to Alabama during January

when the weather was cold, the temperature being near zero. The bees arrived in good condition and had started brood-rearing. The last report stated that the colonies had from five to six frames of brood. Apparently shipping bees during cold weather started them to brood-rearing, and going from the cold north to the southland seems to be just the thing. We are watching this shipment of bees during midwinter with keenest interest and if satisfactory we shall try the same experiment next year and report the result through the columns of Gleanings at some later date. We have spent the last four winters in Florida, and it seems strange this winter to be home in Ohio.

Our Tri-county Beekeepers' Association meets the second Tuesday of each month with a fairly good attendance A number of the members have purchased package bees for spring deliveries.

Delphos, Ohio. Fred Leininger.

* * *

In New York

At a directors' meeting of the Western New York Association, held Monday, March 2, at Buffalo, it was decided to hold the midsummer meeting and picnic on Tuesday, August 4, at the home of the secretary, W. C. Wahl, Williamsville, Erie County. Mr. Wahl is a live-wire secretary, and all can be assured of a worth-while meeting.

During the warm spell the middle of February bees had a good flight, and have been flying some also during this first week of March. The bees in the home yard, and those in the out-yards that we have visited, seem to have wintered finely. They appear to be strong, show very little spotting, and very few dead bees have been carried from the entrances. Altogether they seem to be in as good condition as one could wish. The cellar bees became rather uneasy during the February warm spell, but at present they are very quiet, and a peek under the quilts convinces us that they are not dead.

One friend from Cattaraugus County writes that his bees had brood when he examined them during February. While we did not make any examination, we are quite sure that ours had no brood at that time. This difference is probably due to difference of climatic conditions. The coldest we have had it here at home has been around zero, while in Cattaraugus it has been many degrees colder, which might have caused the starting of egg-laying by the queen.

Clover is looking good at this time. The ground is bare, yet very little heaving has occurred; but the next few weeks will tell the story on both the clovers and the bees. Prospects certainly look good at present.

The condition of the honey market here now is rather slow, as many buy maple sweets at this season in preference to honey. There is very little honey left in producers' hands at this time, although there are a few producers who have considerable carry-over.

Ransomville, N. Y. H. M. Myers.

* * *

In Wisconsin

That Wisconsin beekeepers are going to make a strong effort to get as much honey as possible of the crop which a fine stand of clover promises for 1925, is evident through the interest which they are taking in local meetings. A surprisingly good atttendance has been shown at the meetings in February and March, and spring meetings are already scheduled for the following places: May 11, Ellsworth, Pierce County; May 17, Jump River, Taylor County; May 18, Ladysmith, Rusk County; May 19, Chippewa Falls, Chippewa County; May 21, Wisconsin Rapids, Wood County; May 23, Sarona, Washburn County; May 25, Bayfield County.

Honey is not moving very well in Wisconsin at the present time, but this seems to be mostly due to the fact that there is very little honey remaining in the hands of the beekeepers. Clover plants are in excellent condition, due to the cool and rainy season of 1924. With any kind of favorable weather, Wisconsin beekeepers should get a rich harvest.

Weather conditions in February and March have been such that the temperature of the beekeepers began to run high early, and many beekeepers are fretting under the strain, although they know that, in spite of no snow on the ground, the spring is bound to be long and too cool for the bees to work in the field much before the middle of April.

The annual Chautauqua, which has been held for the past six years, will not be held this year, but will be taken up in 1926, when a special feature is promised by the University Extension Department. In place of the Chautauqua, a beekeepers' tour will be conducted by the State Apiary Inspection Department, from August 10 to 14, to demonstrate to the beekeepers the success of Wisconsin's area clean-up campaign. A demonstration of the Hutzelman solution will be given in Rock County, and from there the beekeepers will be conducted to a number of the good and bad areas extending north to Fond du Lac County. Arrangements for the tour are being made by Dr. Fracker and C. D. Adams.

One little meeting, which should be of

special interest to beekeepers in southwestern Wisconsin, will be a gathering at the yard of N. E. France on July 2. Mr. France is making big plans for this meeting at one of his out-apiaries.

Madison, Wis. H. F. Wilson.

* * *

In Ontario—Since sending in my last "notes" from Ontario, the weather has been much milder than usual for this time of year, there being only a few days showing low temperatures such as we often experience in late February and early March in this latitude. Bees are wintering well, so far as I have observed in our own apiaries, and learn from reports from almost all parts of Ontario and a few from Quebec.

The snow is about all gone—in fact, has been gone since the first of March in our immediate locality. As a consequence, clover is in a precarious condition, and its condition in the spring will depend upon the weather we may have for the next three weeks. If we have continued heavy frosts at night, with warm sunshine in the daytime, possibly clover may be badly damaged during the next month; but it is all right yet, so we will hope for the best.

Judging by our own experience, coupled with reports sent in from a number of beekeepers, honey sales have been much stimulated during past few weeks, and it looks as though all of last season's crop would be cleaned off the board by the time the 1925 crop is available. This is a very desirable condition from every angle, as a heavy surplus carried over always acts as a brake on the market; for, aside from the extra amount of honey to handle, old honey is almost invariably quoted lower than the current season's crop, even when, as sometimes happens, the old crop is as good as or better than the new honey offered. But, as a rule, no matter how good the honey is the season it is produced, much of it will be inferior by next season by reason of its not being kept under proper conditions. This uncertainty as to uniformity of quality of old honey may possibly explain why it almost always commands a lower price than the new season's crop, as one lot off in flavor will spoil the sale of many lots that are really good.

While the beekeeper can control many factors connected with his business, nevertheless things are constantly cropping up over which he has no control whatever, and sometimes in the course of a few years a really good location can be changed into a very mediocre one, to say the most. For instance, in our immediate locality alsike-growing for seed purposes has been a part of the great majority of farmers' programs in crop rotation for many years in the past. During the past few years, however, a radical change has taken place, for alfalfa seed has been selling for about double the price of alsike seed, and as a result acres of alfalfa are now grown where alsike formerly was grown.

Unfortunately, alfalfa is not a great honey-yielder in this part of the country, and we now have a comparatively poor honey-producing locality in our immediate neighborhood. In the township immediately to the north of us, where there is much light land, sweet clover has come in very fast. That is where we now have most of our bees. Only a few years ago this township was a poor honey locality, at least a large portion of it, while today it is much better than the richer soil that predominates where our home is located. The moral is that the beekeeper must be prepared for great changes, and "if the mountain will not come to Mahomet, Mahomet must go to the mountain."

In these days of modern wonders we get so accustomed to the things not so long ago classed among the impossible, that we really fail to appreciate the age we are living in. Possibly this comment applies to radio more than to any other thing that we can think of just at present. Only a few years ago we heard with much doubting about the wonderful things Marconi and other wizards of the air were doing and were about to do. Today we sit down with as little concern as though we were going to read a book for a while, and listen to lectures and concerts coming in from all over the continent. During the past winter months so many different talks regarding beekeeping and honey were heard that I have lost track of them. All were fine addresses, some of them particularly so.

A few weeks ago I happened to tune in on CNRO, Ottawa, Ont., and listened to a very fine address by Rev. Father Gauvreau, if I remember the name correctly. I thought this one of the best addresses on bees and honey that I have been privileged to listen to, for while he told enough of the life history of the bees to get any one keyed up to a high point of interest, his main concern was in explaining the uses of honey and its value as a food, as compared with cane sugar. I thought at the time that, from an advertising standpoint, an address like that is worth thousands of dollars spent in printers' ink. Who knows but that, in the near future, much advertising of that nature may be done as radio becomes even more common than it is at the present time. J. L. Byer.

Markham, Ont.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Bees Caught by Cold Snap. Bees have suffered a heavy loss due to the most prolonged cold snap that we have ever known. J. W. Reid writes that at Uvalde the loss is very heavy. But among my own colonies, which were very strong, the heaviest loss in any colony was less than a quart of dead bees; many had a loss of from a pint to almost nothing. Among 530 colonies most of which were very strong, I find five colonies that scarcely lost a bee. On examination I found just what I had expected—the long warm weather precedent to the cold snap had caused a rather loose and extended clustering on combs that were open, but with insufficient supply of open honey. Those bees on the outside of the clusters were on solid combs of honey, but dead. Those that came through with no loss were compactly clustered on open combs with plenty of stores.

Indio, Texas. J. E. Chambers.

Slumgum, Refuse and Old Comb. How any well-informed sane person can tolerate the shipping of slumgum, refuse from rendering comb and wax scraps through the country to have the beeswax rendered from it, is utterly beyond be. All these things are liable to have honey and juice or water leak out of them. They may be at a railway station for days before they are called for. These fluids may be left at the shipping point or in the car where they are stored, to be carried home later by robbing bees. There is no use in saying that this is improbable, much less impossible. It is both probable and possible and should be prohibited. Now is the time to nip this practice in the bud. Legislation should be introduced in the various provinces to make the shipment of slumgum, cuttings from frames and scrapings from frames, etc., illegal.

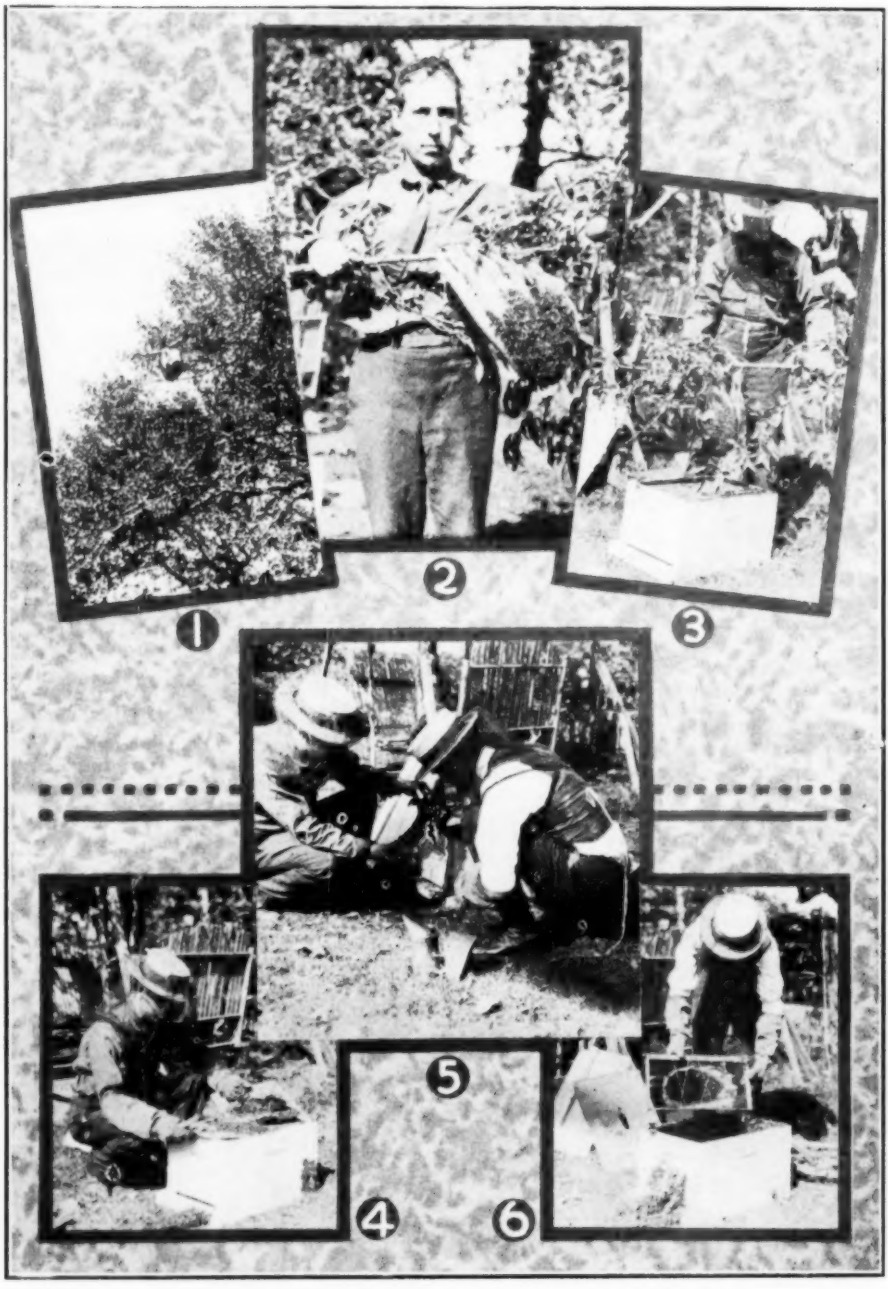
Brantford, Ont. R. F. Holtermann.

Spring protection by means of folding cases made of Celotex. Four folded cases are shown in the flat at the left. This method of protecting cellar-wintered bees in the spring is used by F. A. Graham, Harbor Springs, Mich.

Good Crop from Small Apiary. Enclosed find a snap shot of my apiary, which last season consisted of 20 colonies. These twenty colonies produced two and a half tons of extracted honey and 15 supers of comb honey. The plants from which the honey was made consisted mostly of sweet clover and basswood. The honey was all of the clearest and finest quality. The best colony shown in the picture produced during the season nine full-depth 10-frame extracting supers with nine frames each, and one 10-frame super with 28 sections of comb honey.

Sherwood, Ohio. L. E. Kinzer.

Apiary of L. E. Kinzer, Sherwood, Ohio. The best colony in this little apiary produced nearly 500 pounds in 1924.



A SHELTERLESS COLONY IS GIVEN A COMFORTABLE HOME.

(1) This colony apparently believed in plenty of fresh air. (2) A close-up of the home without a house. (3) Shaking some of the bees from their combs into the hive. (4) The combs are cut off one by one and the remaining bees brushed into the hive. (5) The combs which contain brood are sorted out to be tied in place in the frames. (6) The frames of brood are given back to the bees, after which the colony is ready to rearrange its affairs in its new home.

TALKS TO BEGINNERS

Geo. S. Demuth

In the South, the beginner who has by this time come into possession of his colonies of bees has already had opportunity to study his colonies—not only their activity at the entrance, but also some of the interesting things that are taking place inside the hive. The hive can be opened on any warm day and the combs taken out for examination; but in the North it is best to wait until a warm day during fruit bloom before opening the hive, unless the bees are suspected of being short of food.

Opening the Hive

Before attempting to open the hive to take out combs for examination, the beginner should be careful to have his smoker well lighted, so that there will be no danger of its going out while the hive is open. He should put on a good bee-veil and fasten it down snug so that no bees can get under it. The beginner who is timid will feel safer at first if he wears a pair of good bee-gloves, although later he will probably not use them. A good hive tool or strong screwdriver is also needed.

Take off the cover and the upper packing, if the bees are in a double-walled hive or a winter case, then carefully pry up one corner of the cover not more than one-eighth of an inch, in order to blow a little smoke into the opening without permitting any bees to come out. Next pry up an adjacent corner of the cover and blow in a little smoke there, then lift the cover and at the same time blow a few puffs of smoke lightly over the top of the frames to drive the bees down. Only enough smoke should be used to keep the bees out of the way and prevent them from making an attack. Too much smoke causes great confusion among the bees and makes it difficult to handle them. The important thing in preventing stings while handling bees is to work carefully without jarring the hive or hive parts and without any quick movements. Bees resent any quick movements.

Lifting Out the Combs

Before taking out the first frame the adjacent frames should be crowded to one side. If the combs are of the self-spacing type, the entire set of frames should be crowded toward the opposite side of the hive by using the hive tool as a lever between the first frame and the side of the hive. This may give room enough to take out the first frame, unless it is bulged with honey or has attachment to the adjacent comb or side of the hive. In such cases it may be best first to remove the second or third frame.

After the frame has been loosened and room made by crowding the other frames aside, so that the comb may be taken out without rolling bees between the comb being removed and the adjacent one, it may be lifted carefully from its place in the hive. It is well to have near-by an empty hive or box large enough to hold one or two frames so that the first frame taken out can be set into the box, thus leaving more room for handling the others.

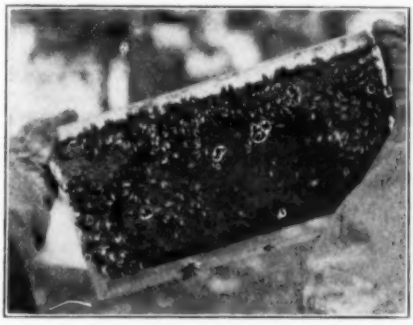


Fig. 1.—Comb from brood-chamber containing brood, honey and pollen.

Comb after comb can now be taken out and examined on each side. The opposite side can be turned toward the operator by first turning the comb to a vertical position, then swinging it around on the top-bar as an axis.

What to Look for on Brood-combs

A comb taken from the middle of the brood-chamber will look like that shown in Fig. 1, except that it may have more bees adhering to it. In Fig. 1, the upper corners of the comb contain honey. This is the normal position of the honey in the brood-combs. Note the appearance of the cappings over the honey. The oval-shaped area of capped-over cells, with its center below and to the left in the illustration, is sealed brood. Note the difference in the appearance of the cappings over the brood and those over the honey in the upper corners of the frame. The open cells between the sealed brood and the honey above may contain pollen, and probably some recently-gathered honey; or they may contain some brood not yet far enough developed to be sealed. At this season large amounts of pollen are stored in open cells close to the brood, ready to be used by the nurse bees in elaborating the food for the young. The appearance of the

pollen in cells is shown in Fig. 2. It can be easily recognized in the comb, having somewhat the appearance of finely-ground meal, the color varying considerably, but yellow and brown predominating.

Beyond the sealed brood at the sides and bottom, and perhaps at the top, will be found large larvae coiled tightly in the cell appearing as white grubs. These are nearly ready to be sealed over. Beyond the large larvae will be found smaller and smaller ones towards the outer margin of the brood area, until they become barely visible to the naked eye. Beyond these, in the margin of the brood area, eggs will usually be found in the cells. In order to see these it is necessary to hold the frames in such a manner that the light will shine against the base of the cell. It is somewhat difficult at first to see these tiny eggs, but the beginner should learn to find them readily for he will have many occasions to look for eggs in the various manipulations of his colonies. Their appearance is shown in Fig. 3.

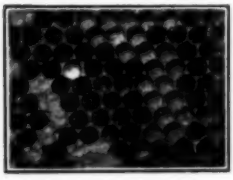


Fig. 2.—Pollen in cells at right, capped brood at left.

What Can be Learned by This Examination

The presence of worker brood in all stages of development tells the beginner that the colony has a normal queen, whether he sees her or not. The presence of a considerable amount of sealed honey in the upper corners of the comb, and possibly in the greater portion of the outside combs, tells the beginner that the colony is not lacking in its food supply. If, in addition to these, the hive appears to be nearly full of worker bees, the colony has all that is necessary for its prosperity and needs only to be kept snug and warm during April in the North by leaving the winter packing in place if in a double-walled hive or winter-packing case, or by seeing that the covers fit snug and tight if in single-walled hives that have been wintered in the cellar. In the South it may be necessary to give strong colonies a second story during the month of April, for the expanding brood-nest, together with the storing of incoming nectar, may fill the hive and bring on a crowded condition if extra room is not given.

Correcting Some Common Defects

A common defect in colonies of bees is that of coming through the winter with insufficient bees to build up to profitable strength in time for the honey flow. In the North, even the smallest colonies should occupy at least four or five of the spaces between the combs the first of April. Strong colonies may occupy almost the entire brood-chamber at this time. Colonies which occupy less than four or five spaces between the combs will not be able to build up in time for a June honey flow and will be of little value unless there is a honey flow later. If the beginner has come into possession of such colonies he can correct this defect by ordering package bees from the South and giving one or two pounds of bees without a queen to each weak colony, to arrive the latter part of April or early May in the northern states.

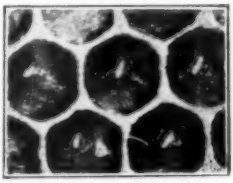


Fig. 3.—Eggs are fas tened to base of cell.

Another defect often found in the spring is that of queenless colonies. These can be detected by looking for brood, as described above. Colonies that have plenty of honey in the hive at this time should have brood, if they have a normal queen. If there is no brood, and honey is present, the colony is evidently queenless. If the queenless colony is found during April it is possible even for the beginner to order a new queen from the South and introduce her to the queenless colony. As a rule, however, it is more profitable to unite the queenless colony with a colony having a queen, but which needs more workers.

A very common defect, and one which probably causes more loss than any other, is that of insufficient stores. It is not often that bees are able to gather enough nectar from the fields in the North during April to help their food supply to any extent, and they must therefore consume of their reserve stores. Between this time and the beginning of the main honey flow, whether it comes in late April, May or June, no colony should be permitted to run low in its supply of honey, but should have not less than 10 or 15 pounds in reserve at all times. Any colonies that are found lacking in their food supply should be supplied immediately. Most beginners are inclined to feed too little when colonies are found that are short of stores. An ordinary 10-pound honey pail filled with syrup made of two parts of sugar to one part of water, either by weight or by volume, is not too much to give a colony that is low in stores at this time. Directions for feeding were given in this department last month.

JUST NEWS
Editors

The financial statement of the American Honey Producers' League is published in the March issue of the League Bulletin. It shows a substantial increase in the amount of funds handled during the year, and a healthy balance of cash on hand amounting to $652.63.

* * *

Purdue University, Lafayette, Indiana, is now putting out a monthly beekeepers' letter, the first having been issued on March 1. These letters can be obtained by writing to Prof. J. J. Davis, Department of Entomology, Purdue University, Lafayette, Indiana.

* * *

B. F. Kindig, in charge of apiary inspection for the state of Michigan, states that southern Michigan is not quarantined against the importation of bees on combs. The line marking off the area not under quarantine is that forming the northern boundary of Mason, Lake, Osceola, Clare, Gladwin and Arenac Counties. That portion of Michigan lying north of this line is quarantined against the importation of bees on combs.

* * *

The "Western Honey Bee," which has been published for many years by a group of beekeepers in southern California known as the "Consolidated Honey Producers of California," has been transferred to A. L. Boyden, of Los Angeles. C. A. Wurth, who has been its editor, lays down his editorial pen to devote his time more fully to honey production, and A. L. Boyden takes up the editorial task in the April issue.

* * *

"Morphology of the Honeybee Larva," by Dr. James A. Nelson, formerly of the Bee Culture Division of the Bureau of Entomology, Washington, D. C., has been published separately as a reprint from the Journal of Agriculture Research, Vol. 28, No. 12, by the Government Printing Office, Washington. D. C. This is a sequel to Dr. Nelson's book, "The Embryology of the Honeybee," published by the Princeton University Press in 1915.

* * *

Circular No. 36 of the Texas Agricultural Experiment Station, (1) "Foul Brood Control and Diseases of Bees, (2) Foul Brood Law and Revised Regulations," has recently been published by the Texas Agricultural Experiment Station, College Station, Texas. The manuscript for this was written in part by Dr. M. C. Tanquary, but was completed by Dr. F. L. Thomas, Dr. Tanquary having resigned to devote his time to commercial honey production in North Dakota.

* * *

"The Bee Louse in the United States" is the title of Department Circular 334 by the United States Department of Agriculture, written by Dr. E. F. Phillips, former apiculturist of the United States Department of Agriculture. The bee louse has been introduced repeatedly into the United States on importations of queen-bees from foreign countries, and has been found in some apiaries in the state of Maryland. Copies of this circular may be obtained free of charge, so long as they last, from the Office of Publications, United States Department of Agriculture.

* * *

Prof. R. B. Richmond, Fort Collins, Colorado, was elected secretary-treasurer of the American Honey Producers' League, to take the place of Dr. S. B. Fracker, Madison, Wisconsin, who has so ably filled this position during the past few years. With this exception, together with the election of Dr. Ernest Kohn, Grover Hill, Ohio, as a member of the executive committee, the officers of the League remain as before. The officers are now B. F. Kindig, Lansing, Michigan, president; Colin E. Campbell, Grand Rapids, Michigan, vice-president; and R. B. Richmond, Fort Collins, Colorado, secretary-treasurer. These officers, with Dr. Ernest Kohn, Grover Hill, Ohio; E. S. Miller, Valparaiso, Indiana, and Frank Rauchfuss, Denver, Colorado, constitute the executive committee.

* * *

A foul-brood law has been passed by the Wyoming State Legislature, carrying an appropriation of $10,000 for apiary inspection and investigation. This new law is the first to recognize the treatment of combs for the purpose of sterilizing them in the control of the brood diseases of bees, since it mentions "combs" among the equipment that shall be disinfected in colonies in which American foul brood is found. The law also provides that every apiary must be listed with the office of the state entomologist; that apiaries shall not be moved without first having secured a certificate of health or permission from an authorized bee inspector; that bees on combs can not lawfully be shipped into the state, as well as a number of other provisions to prevent the dissemination of the brood diseases.

GLEANED BY ASKING

Geo. S. Demuth

Uniting Package Bees with Weak Colonies

Question.—How should package bees be united with weak colonies in the spring to avoid fighting and the killing of queens?

Ontario. Chas. E. Hopper.

Answer.—When the package bees arrive they should be induced to fill themselves with sugar syrup, which is given by painting the wire cloth of the cage with sugar syrup, or sprinkling it lightly over the wire. The queen of the weak colony should then be found and caged in an ordinary introducing cage provided with candy for automatically releasing her. The empty combs should be taken out of the brood-chamber and the remaining combs shoved to one side so that the cage containing the bees can be put in this space. The cage should then be opened and placed in the vacant side of the hive so that the bees can come out to unite with the colony. If the cage containing the package bees will not go inside the hive, it can be placed on top in an empty upper story.

Eight-frame Hive for Comb Honey

Question.—Why is an eight-frame hive preferable for the production of comb honey?

Wisconsin. John Simak.

Answer.—In producing comb honey it is highly desirable to have a brood-chamber almost completely filled with brood and pollen, with but little honey, at the beginning of the main honey flow. In some localities beekeepers have difficulty in building their colonies up to this condition previous to the honey flow when using the Standard ten-frame hive, but in other localities and under careful management most of the colonies can be built up to have the ten-frame Standard hive practically filled with brood and pollen at the beginning of honey flow. Where this can be done the ten-frame hive is preferable; but where it can not, the eight-frame hive may be preferable. In the North, where spring brood-rearing comes on with a rush, it is less difficult to have the larger brood-chamber crowded with brood previous to the honey flow than in some localities in the South where spring brood-rearing is carried on more moderately.

Clarifying Beeswax

Question.—How can beeswax be clarified and made lighter in color without impairing its purity? R. C. Weissenstein.

Pennsylvania.

Answer.—Beeswax can be clarified and made considerably lighter in color by first chopping it into small pieces not more than one and one-half or two inches in diameter, then melting it in a tank or wash boiler having a little water in the bottom. Only enough heat need be applied to bring the wax above the melting point, and when it is all melted the boiler should be set off from the fire and wrapped with blankets or packed in some other way to retain the heat. When properly wrapped it will remain liquid over night and the next morning the clean wax can be dipped off from the top, being careful not to disturb the sediment below. When most of the wax has been dipped off in this way, so that no more can be had without sediment, the remainder should be allowed to cool. The cake of wax left can then be clarified in the next batch. In dipping off the wax it is well to sink one side of the dipper into the wax in such a manner that the melted wax will run into the dipper from the surface, to prevent stirring up the sediment.

Simple Method of Transferring

Question.—I wish to transfer a colony of bees from a Danzenbaker hive to a Standard ten-frame hive this spring. When and how should this be done? F. A. Scranton.

Connecticut.

Answer.—As soon as the colony is strong enough in the spring to need more room, place a Standard hive body of combs on top, if you have them. It is best, if the combs are old dark brood combs, to induce the queen to go up promptly and begin laying in the upper story. When the queen has established her brood-nest in the upper story, place the queen-excluder between the two stories so that she can not go down again. Three weeks later the lower story (the old hive body) can be taken away entirely, since at this time it should contain but little if any honey and no brood, except possibly a little drone brood. In taking away this lower story, the hive can be tilted backward so it stands on end, the bottom removed, and the bees smoked upward into the second story. This method can also be used in transferring bees from a box hive, by placing the box hive on its side in such a manner that the combs will be vertical, then tearing off the upper side and placing the new hive on top. A board should then be nailed over what was originally the lower end of the box hive, leaving an entrance at the lower part. Any opening between the box hive and the new hive should be closed with pieces of lath. If the queen does not go up promptly, she, together with most of the bees, can be driven into the second story by smoking at the entrance and drumming on the side of the box hive. Aften ten or fif-

teen minutes of such drumming the queen-excluder should be put in place so that the queen can not return to the brood below.

Strengthening Colonies Having European Foul Brood

Question.—How can I best build up weak colonies in the spring to overcome European foul brood? I Italianized my colonies last fall, but too late for them to build up to proper strength. James Hamilton.
Illinois.

Answer.—No doubt the best way to build up these weak colonies is to purchase package bees and give each colony one or two pounds of these bees about May 1. Another way is to unite enough weak colonies to make one strong one, regardless of the number of colonies left after uniting.

Combs Wet and Moldy in Spring

Question.—In looking into my hives I find that the combs on the north side are soaking wet, as if they had been submerged in water. The combs are covered with mold. Will this do any harm? Steven Ripic, Jr.
New Jersey.

Answer.—This moisture is from the breath of the bees. The vapor given off condenses in the coldest portion of the hive, often resulting in the honey becoming thin and beginning to ferment, as well as in moldy combs. This condition can be avoided by keeping the bees in double walled hives or packing the single-walled hives sufficiently to prevent condensation of moisture within the hive. As a rule, mold does not greatly harm the combs and the bees will clean them up. Sometimes, however, combs are made brittle by moisture and mold, so that bees gnaw down the walls of the cells and build them anew.

Queenless Colonies in Early Spring

Question.—What should be done with colonies found to be queenless in early spring?
Ohio. Elmer Lehman.

Answer.—As a rule, the best thing to do with a queenless colony in early spring is to unite it with a colony having a laying queen, choosing one that needs strengthening. Another thing that can be done with such colonies is to send south for a queen and introduce her to the colony.

Kind of Starters for Sections.

Question.—Which kind of starter is best to use in sections so that I will get more sections of fancy honey? H. Wohlsclagel.
New York.

Answer.—Nothing less than full sheets of foundation will result in uniform and well-filled sections of comb honey. The sheets of foundation should be cut so that they will swing free at the sides of the sections by about one-sixteenth of an inch and come within about one-eighth inch of the bottom. Full sheets of foundation not only result in a better appearance of the finished honey but more honey will be secured by their use during a rapid honey flow, because the bees are able to build the combs faster. Another advantage in using full sheets is that no queen-excluder is necessary when none of the sections contain drone comb. When only narrow starters are used the bees often build drone comb in the lower portion of the sections, and, if any such combs are used as bait combs the next season, the queen will often go above to lay in these drone cells.

Treatment for Combs Containing Fermented Honey

Question.—I have some extracting combs that are partly filled with pollen and granulated honey. The honey appears to be fermented. Should these combs be melted for wax? or is there any way that they can be saved to use again? Could they be put outside in the spring and the bees permitted to clean them? Geo. C. Ronning.
Wisconsin.

Answer.—Such combs should not be exposed to the bees outside. To do so would cause great excitement among the colonies, to say nothing of the danger of exposing some combs containing disease and spreading American foul brood in this way. These combs should be put into an upper story over a strong colony, or if some colonies are found having one or two empty combs at the side, these empty combs can be removed and the combs of honey and pollen put in their place.

Bees Killed by Spray Poison

Question.—I suffered considerable loss last year by my neighbor's spraying fruit trees when in full bloom. If I do not succeed in persuading him to wait until the petals are down before spraying, will it be advisable to confine the bees in their hives the day the spraying is done, and the following day?
Iowa. W. W. McCarty.

Answer.—Spraying fruit trees while in full bloom is contrary to the advice given by the best entomologists in this country. The spray for the first brood of coddling moths should be applied after 90 per cent or more of the petals are down, for best results. There is a short period between the time the blossoms fall and the time the calyxes close during which the spray should be applied. Fortunately, the best time to spray from the orchardist's standpoint happens also to be the best time so far as the honeybees are concerned. It would not be advisable to confine the bees at the time of spraying. If you are not able to persuade your neighbor to spray at the proper time, it will be better to move your bees to another location at least two miles away from the orchard. If beekeepers everywhere would do this, the orchardists would no doubt soon be begging beekeepers to bring the bees back to the orchards during the blooming period in order to have better pollination.

A. I. Root's Story of His Own Life

Lo, this only have I found, that God hath created man upright; but they have sought out many inventions.—Ecc. 7:29.

A queen will lay and the eggs will hatch without pollen, but in my experiments I was never able to get the larvae old enough to seal up unless pollen was available.

I fed rye meal and oat meal to the bees in the spring of 1867, providing about a bushel and a half, supposing that to be plenty, but the bees began on it with astonishing vigor and consumed nearly all of it on the first two or three pleasant days. After the rye meal and oatmeal was all gone, they seemingly became almost demented. They would dive into the flour and burrow into it until I felt they would surely lose their identity. They would fly toward me and take meal out of my hand as I was carrying it out to them. Such an incessant jubilant humming as they kept up while about it, made me think that they could not be other than the happiest little scamps on the face of the earth. And the huge "little biscuits" (as our children termed them) which the bees deftly padded up on either leg, presented an appearance ludicrous in the extreme as they scampered hurriedly into their hives. Even after the rain had wet down their precious meal, and it had become baked over the top, they would not give it up, but tunneled and burrowed under it until one imagined they were not bees, but some liliputian wild animals burrowing in the ground.

Some of the neighbors asked whether feeding this meal really amounted to anying. Of course it did. The bees never were in half so fine a condition. They would have been fully prepared for the apple blossoms even if they had come out before the first of May, and (will you believe it?) I actually had a fine swarm on the 19th of May, the usual time for black bees to swarm in this locality being about the Fourth of July. A swarm of bees in May here was something before unheard of.

In May the bees were carrying in flour gloriously and used up all the rye and oatmeal. Then what do you think? We had a new circular sawmill started, and the Italian bees seemed to take fully as deep an interest in it as anyone else. As soon as a pile of sawdust was made they evidently seemed to think it a huge pile of meal gotten up expressly for them, and the little fools even after four days had not yet discovered the difference, but were as busy as possible bringing home huge pellets by the thousands. Is it possible that they can really make any use of it as they do of the meal?

Different Kinds of Pollen-substitutes

In all my experience I never saw bees work on meal as they did during April, 1875. They seemed to get crazier and crazier each day, and as no natural pollen made its appearance until April 5, I had ample time for various experiments with different kinds of meal. Wheat flour seemed to come next to the rye and oats. After this, corn meal, buckwheat and oil meal. The latter I tried only after the bees had commenced on natural pollen, which, of course, might make a difference. They certainly took it, but did not seem to fancy it as they did fresh rye and oats. I demonstrated the value of having the meal fresh by trying to make the bees take meal that had been ground the year before. They would use it, but only when the new was not to be had.

The condition of the colonies was most encouraging. Solid masses of cells of this artificial pollen were to be found along the top-bars and end-bars of the frames, and the rest of the combs were solid sheets of eggs, with perhaps larvae of the size of small beads occupying the center.

By April 8 the new lot of brood was just beginning to be sealed over. On April 19 we had a very cold spell, the thermometer registering only 14 degrees above zero. My weakest colony died outright, which left me with an even fifty, and all were more or less injured. One strong colony had brood clear down to the bottom-bar of the central comb and so near the entrance that the severe freeze drove the bees away from it, allowing it to freeze. The consequence was that I found a small heap of bees in front of the hive, and in the midst of it brood almost mature. At first I thought they might have suffered from want of water, or even from want of stores, but on examination I found plenty of stores and water that had run down on the bottom-board at the back end, so I was

forced to think the trouble was due to having more brood than the bees could cover under the circumstances.

A Substitute for Pollen Fed Inside the Hive

Following the severe freeze in April, 1875, Mr. Langstroth, who was my guest at the time when the bees were unable to get natural pollen, suggested that I give a substitute inside the hive. I expressed incredulity and when he mentioned a mixture of honey and rye meal I told him I had tried it over and over, but without the slightest degree of success. He smiled, and directed Mrs. Root to sift the coarse particles out of the rye meal and to make a feed of honey and meal that should not be thicker than good syrup. This was put into a feeder and given the bees when quite warm. Sure enough, they took it up like chickens and asked me as well as they could for more. Mr. Langstroth's idea was that the mixture was taken directly into the stomachs of the nursing bees.

The next day the weather was so wintry that the feeder would not work, and the only way we could feed was to turn up the quilt and pour the "gruel" directly on the cluster. It was not desirable to tear up the quilt in cool weather, and Mr. Langstroth said he had been fully convinced for years that a shallow cavity was needed above the combs to make a space that the bees could back up into like a flock of sheep in cold weather, and also to enable them to avoid the repeated disaster of getting separated by the combs from the main cluster. Mr. Langstroth recommended that a part of the quilt be raised a little from the top of the frames by two corncobs laid crosswise, about six inches apart. In the spring, of course, after the cold weather, the cobs were to be removed; and a hole in the quilt, left for ventilation was utilized for pouring in feed or to get a look at the bees without disturbing the edges of the quilt, which were waxed down close and secure. Gruel mixtures, therefore, could be poured right through this hole.

On April 27, I looked at the colonies to which I had given the gruel and they had unsealed larvae in all stages, while other colonies of equal strength had only sealed brood and eggs.

By this time nearly all the old bees that wintered over had died off. The one exception where they had not died was a colony that I found queenless and without brood on April 9. This corroborated the statement made by C. Wurster, Kleinburg, Canada, to the effect that it is the brood-rearing that uses up the bees. This colony had not reared a young bee that spring, and yet they were about as prosperous as when set out of the bee house in March.

There were many inquiries as to what could be done to help weak colonies in the spring. I wondered if it would not be better to reduce the colonies in the fall, uniting them until there were none except extra-heavy ones, all with an abundance of pollen and stores. A dozen such colonies would be worth more than fifty ordinary ones.

Inducing Bees to Rear Brood in Winter

I also experimented with several colonies kept in a glass house for four or five months in winter. I produced brood and then prevented its production many different times by feeding flour and then withdrawing the flour. The brood would be raised a little time after the pollen was exhausted from the hive, but after it ceased no amount of feeding would start it up again until the meal also was included. After this, in the early spring, I tried to get brood reared in colonies that had exhausted their pollen, but failed. After giving the same colony a comb well filled with pollen, full sheets of brood sprang into existence at once, while at the same time the pollen disappeared so quickly as to be astonishing.

Along in the 70's I built up a late natural swarm on flour candy placed in the frames. I showed this colony to Prof. Cook when he visited me the following December, and we saw plenty of brood in all stages at that time. The queen had been fertilized in October. The next spring a customer paid me for his choice of the best colony in my apiary and he selected this particular one.

Summary of the Pollen-feeding Experiments

The whole matter of feeding substitutes for pollen hinges on locality or season, whether pollen is plentiful or not. There are seasons when our bees seem to care for very little meal, and at other times they seem just crazy for it. When they are so eager for it, I have examined hive after hive without finding a trace of pollen. The bees are actually powerless to raise brood unless they can find some such substitute that will answer as well. Under such conditions, I have known bees to go to a sawmill until the people complained that they could not handle the lumber on account of the bees, and the piles of sawdust were also covered with them. They would go inquiringly into the barns and stables, as they seemed to be crazy for anything in the line of meal, flour, or chopped feed. Under these conditions oats and rye, ground together, are always taken with wonderful avidity. Brood-rearing is started as if by magic. The largest honey yield I

(Continued on page 257.)

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HONEY AND WAX FOR SALE.

HONEY in 5 and 60 lb. tins. Van's Honey Farms, Hebron, Indiana.

NEW CROP clover honey in new 60-lb. tin cans. D. R. Townsend, Northstar, Mich.

FOR SALE—Comb honey at reduced prices. State your wants. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Choice white clover honey. Sample 15c. C. H. Hodgkin, Rochester, Ohio.

HONEY for sale, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Extracted, comb and chunk honey. Prices on request. Sample 15c. F. W. Summerfield, Waterville, Ohio.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gallon barrels. Samples and prices on request. A. I. Root Co., 16-18 Jay St., New York City.

NORTHERN Michigan's best honey in new 60-lb. cans. Sample, 15c. Write for prices. L. C. House, Stambaugh, Mich.

HONEY for sale in 60-lb. tins. White-clover Indian crystallized, 13c per lb. L. A. West Indian honey liquid, 11c per lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

WE have a remnant of something like 100 cases of fine white clover extracted honey left that we would like to dispose of before the new crop is in. New cans and cases. There is none better. E. D. Townsend & Sons, Northstar, Mich.

BLENDED raspberry and milkweed, two of the best honeys produced in northern Michigan. Left with the bees until thoroughly ripened. Unexcelled for table use. Price in 60-lb. cans, 15c per lb. In 10-lb. pails, postpaid, $2.50. Sample by mail, 20c, which may be applied on purchase of honey. Elmer Hutchinson & Son, Lake City, Mich.

HONEY AND WAX WANTED.

WANTED—White clover extracted in 60-lb. tins. Also aster extracted. H. C. Lee, Brooksville, Ky.

HONEY—Quote price and mail sample. Will trade package bees for honey. Van's Honey Farms, Hebron, Ind.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same. A. W. Smith, Birmingham, Mich.

WANTED—Clover and raspberry honey, comb and combless. Give description, quantity and best price delivered here. E. W. Peirce Co., 28 W. Main St., Zanesville, Ohio.

BEESWAX WANTED—Until further notice we will give 33 cents cash for pure average domestic beeswax, or 35 cents in exchange for bee supplies. Ship direct to us. The A. I. Root Company, Medina, Ohio.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade price, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

OLD COMBS WANTED—Our steam wax presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1925 catalog. We will buy your share of the wax for cash or pay you a little more in exchange for foundation or supplies. Dadant & Sons, Hamilton, Ill.

FOR SALE.

COMB honey equipment for sale cheap. Write L. S. Spafford, Martville, N. Y.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—4-horse steam engine, Uprite, $35.00. J. W. Utter, Pine Island, Orange Co., N. Y.

SOUTHWESTERN distributor for Robinson's comb foundation. Holloway Bros., Marietta, Okla.

MAKE queen introduction SURE. ONE SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

EIGHT-FRAME ROOT POWER EXTRACTOR for sale cheap. Going into other lines. Address Wisconsin Honey Farm, Oconomowoc, Wisconsin.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest prices. E. S. Robinson, Mayville, N. Y.

FOR SALE—Root "QUALITY" bee supplies. Buy Root goods and get the best by test. A catalog for the asking. A. M. Moore, 22½ S. 3rd St., Zanesville, Ohio.

FOR SALE—Robinson-made, medium brood foundation, standard size, in 5-lb. boxes, packed in straw, four boxes to carton, 55c a pound. Ray C. Wilcox, Odessa, N. Y.

SPECIAL SALE—Bee hives and some other over-stocked bee equipment. Send list of your wants and get these bargain prices. A. G. Woodman Co., Grand Rapids, Mich.

REXFORD Push-in-comb introducing cage. Sample, 20c, during April. Safe, automatic. No opening time necessary after queen is in. Room for all combs. 35c, 3, $1.00. O. S. Rexford, Winsted, Conn.

FOR SALE—We accumulate from time to time beehive and beekeeping material, slightly shopworn or not regular pack, which we can sell you at attractive prices. Write for list. Dadant & Sons, Hamilton, Ill.

SMALL circular bench saw with emery-wheel stand. Very handy combination. Louis Hepfinger, Mfr., Lisbon and Wauwatosa Ave., Wauwatosa, Wis.

FOUR-FRAME hand extractor, $55.00. Four-frame power extractor, $70.00. Both in good running order. L. K. Hostetter, R. F. D. No. 5, Lancaster, Pa.

FOR SALE—400 combs, 9⅛x17⅝, drawn from full sheets of foundation, guaranteed disease-free, 25c each. Lester G. Hoblin, 1031 56th St., Brooklyn, N. Y.

FOR SALE—All modern bee outfit. Supers are all standard ten-frame. Will sell very reasonably. Write for prices. E. W. Kaupp, R. F. D. No. 2, Bay City, Mich.

FOR SALE—Second-hand 5-gallon cans. Only good cans offered. Two cans each case. Per 10 cases, $6.50; per 25 cases, $15.00. Ask for prices on quantity lot. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—46 double-walled Buckeye hives; 140 extracting supers; 10 Alley queen-and-drone traps; one steam uncapping knife. All in good condition. Write for particulars. Fred Briggs, New Sharon, Iowa.

FOR SALE—At a sacrifice, all of the assets of the Rocky Mountain Bee Company, Billings, Montana. Book value, $30,000 to $35,000. Or will sell controlling interest in company. Mrs. W. Hickox, Box 1319, Billings, Montana.

FOR SALE—50 8-frame comb-honey supers for 4¼x4¼x1⅞ sections with section-holders, plain wood separators. Root make, painted, first-class condition, 75c each in lots of 5. Albert G. Hann, Glen Gardner, N. J.

HONEY-NUT CHOCOLATES. A new and delicious confection made of pure honey, nuts, fruits, etc., $1.00 lb.; 50c, ½ lb. postpaid. Wholesale prices on application. J. D. Kroha, 87 North St., Danbury, Conn.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—25 each, Jumbo and Standard hive bodies, 50c each; 35 6¼-in. deep extracting supers; 30 4 x 5 comb-honey supers, 30c each; 10 queen-excluders, wood and wire, 40c each. All nailed, painted, good as new, everything ten-frame. Radio receiver, half price. A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE—44 10-frame Standard metal-cover hives, well painted and clean; 38 contain Italian bees, which are guaranteed free of disease; 6 have full sheets of drawn comb, wired; 96 comb-honey supers with all trimmings. In fact, one of the finest comb-honey outfits to be had. The first reasonable offer takes the outfit, as a whole, but I will not sell separately. Must be taken by April 20 or before. C. R. Mohr, Delta, Ohio.

BEES AND QUEENS.

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease, or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

J. P. Hill. Please write B. F. Smith, Jr.

SEE large ad on page 262. W. C. Smith & Co., Calhoun, Ala.

SEE E. J. Beridon, Jr., ad page 266 before buying package bees.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

PACKAGE BEES—Circular free. Van's Honey Farms. Hebron, Indiana.

BEES FREE. Trap stray swarms. Circular free. Ed. Swenson, Spring Valley, Minn.

PACKAGE BEES, ALSO QUEENS. It will pay you to get our prices. J. J. Scott, Crowville, La.

ITALIAN QUEENS—1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. G. E. Whittle, Mussel, Alabama.

FOR SALE—20 colonies bees and standard size 10-frame equipment with certificate of health. Alvin Buff, Frost, Ohio.

LEATHER-COLORED Italian queens, $2.00 until June 1; after, $1.00; tested, $2.00. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—100 colonies of Italian bees equipped for comb-honey production. Guaranteed free from disease. Lewis J. Elwood, Fort Plain, N. Y.

BRIGHT Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Write for prices on package bees. T. J. Talley, Greenville, R. F. D. No. 3, Ala.

FOR SALE—Bright Italian queens, $1.00; 6, $5.00; 1-lb. package bees with queen, $3.00; 2-lb. package with queen, $4.50. Powell Owen, Greenville, Ala.

FOR SALE—Three colonies bees in Standard hives and other equipment, guaranteed free from disease. D. J. Ray, 3040 Lexington St., Chicago, Illinois.

MOTT'S NORTHERN BRED ITALIAN QUEENS. Select untested, $1.25. After June 1, $1.00. Select tested, $2.00. List free. E. E. Mott, Glenwood, Mich.

FOR SALE—40 colonies of bees in movable frame metal-cover hives, with one deep extracting super each. Guaranteed free from disease. I. L. Barton, Townville, Pa.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1925 ready, free. Dr. White Bee Co., Sandia, Texas.

FOR SALE—10 hives of Italian bees in Buckeye hives, guaranteed free from disease. Apply or write to Drug Store, Wm. March, 12801 Woodland Ave., Cleveland, Ohio.

ONE 2-lb. package bees with queen, $4.25; 3-lb., $5.00. Larger the order, better the price. Tested queen, 50c extra. Established in 1909. Have no disease. F. M. Morgan, Hamburg, La.

A FEW strong colonies Italians for sale again this spring in 10-frame bodies, guaranteed free of disease. May delivery. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

TWO thousand packages with untested queens, in 100 lots, 3-lb. size, $4.00 each; 2-lb. size, $3.00 each, while they last. Nuclei at same prices. Italians only. W. E. Buckner, Mt. Vernon, Ga.

C. W. PHELPS & SON are still producing the famous Phelps Golden Queens. PROLIFIC, GENTLE and very BEAUTIFUL. $2.00 each; 6 for $10.00; $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

LEATHER-COLORED three-band Italian bees and queens bring home the honey and make happy bee men. See our ad on page 270. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

SCOTT QUEENS FOR 1925—Our high-grade queens will be ready about June 1. These queens are bred for heavy honey production. They get big crops for us and will for you. They are gentle,too. Three-banded only. One, $1.50; six, $8.00. Circular free. The Scott Apiaries, La Grange, Ind.

FOR SALE—Some fine Golden Italian queens, untested, $1.00 each; tested, $2.00 each. Queens ready May 20. Satisfaction guaranteed. J. F. Michael, Winchester, R. F. D. No. 1, Ind.

100 COLONIES Italian bees, 10-frame, $10; 8-frame, $8.00. All Standard Root hives, all frames wired, all combs drawn from full sheets, guaranteed free from disease. George Biggs, 4431 Wrenwood Ave., Baltimore, Md.

THREE-BANDED Italian queens, producing large uniform bees. Queens that have satisfied beekeepers for 15 years. Untested queens, $1.00 each; 6, $5.50; 12, $10.00. Orders booked now. G. H. Merrill, Piedmont, S. C.

FOR SALE—Italian bees on wired combs, full sheets foundation, guaranteed free of disease, in nearly new 10-frame Root-Hoffman Standard hives, painted white, $8.00 each. H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio.

FOR SALE—Bright leather-colored queens. Bees none better. Write for prices. Also will have some bees by the pound for sale in 1925. Get price and place orders early to insure getting when wanted. M. Bates, Greenville, R. F. D. No. 4, Ala.

WARRANTED pure-mated Italian Queens, $1.25 each. Will be ready to mail in my sure introducing cages by May 15. No black or hybrid bees around here, so my queens will be mated with pure Italian drones. Daniel Danielsen, Brush, Colo.

THREE-BAND Italian bees and queens, 2-lb. package with untested queen, $4.50; 1 untested queen, $1.00; $10.00 per doz.; 1 tested queen, $1.50. My motto is quality. No disease, safe arrival and satisfaction guaranteed. J. Allen, Catherine, Ala.

GOLDENS ONLY—A limited number of late queens after April 15, $1.25 each; a few special breeders, $5.00 each; untested, $1.00. See my display ad in May issue. No bonding mark to it, but a money-back guarantee. S. H. Hailey, Pinson, Tenn.

APIARY of over 80 colonies (guaranteed free from disease) fully equipped for both extracted and comb honey, including engine, power saw, extractor, etc. Might be willing to instruct buyer in beekeeping. Must be called for. Chas. Reynders, Ulster, Pa.

GOLDEN Italian queens, untested, about May 1, $1.00; 6 for $5.40; 12 or more, 80c each. Last fall's rearing, tested, $1.50; select tested, $2.50. No disease. Good queens. Safe arrival and satisfaction guaranteed. D. T. Gaster, R. F. D. No. 2, Randleman, N. C.

FOR SALE—Golden Italian queens, untested, $1.00 each; 6 for $5.40; 12 or more, 80c each. Tested, $1.50 each; select tested, $2.50 each. Apiary inspected and no disease of any kind found. Safe arrival and satisfaction guaranteed. Sam Hinshaw, Randleman, N. Car.

PACKAGE bees and three-band Italian queens that please. Our 20 years' experience here in selective breeding of queens and the shipping of bees are at your service. No disease in this section. For prices and reference, write Allenville Apiaries, Allenville, Marengo Co., Ala.

MIDDLE TENNESSEE-BRED select three-banded and Golden Italian queens for 1925. One, $1.00; 6, $5.00; 12, $10.00. Write for price per 100. Apiaries under state inspection. Safe arrival and satisfaction guaranteed. Circular free. Middle Tennessee Apiaries, Columbia, Tenn.

FOR SALE for 1925, 3-frame nuclei, three-banded queens and also pound packages; begin shipping April 1. Queens, $1.00 each; three-frame nuclei, $5.00; 3-lb. package, $5.00 each. Walker & Son, Vidalia, Ga. Address your inquiries until further notice to Curd Walker, Jellico, Tenn. 25 years' experience.

WE want to quote you prices on your May and June queen requirements. A card will bring our circular and price list. R. V. Stearns, Brady, Texas.

BOOKING orders, bees, queens. Beginners' outfits, $15.00. Ten-frame bodies, 8-frame hives. No disease. Hickory Shade Apiary, Otterville, Mo.

LOOK!—Bees by the pound, without queens, at $1.00 per lb. 4-lb. packages only. 10% discount for 10 or more. 20% books order. Ship any time. A. J. Heard, Wellston, Georgia.

WE are offering our high-grade untested Italian queens at $75.00 per 100 for May and cheaper for June delivery. An inquiry will bring our circular. R. V. Stearns, Brady, Tex.

FOR SALE—50 colonies bees in 10-frame Root hives, guaranteed free from disease. 300 extracting supers used two seasons. Other equipment. Fred Telshaw, Waymart, Pa.

15 COLONIES Root strain Italians, guaranteed no disease. New Root 10-frame Excelsior hives, painted, Hoffman wired full sheet combs, $10.00 each. John E. Everett, Bound Brook, N. J.

CERTIFIED Italian bees, 150 full colonies of this fine strain of leather-colored stock will be sold as usual. 25 years under STATE supervision. Charles Stewart, Box 42, Johnstown, N. Y.

GOLDEN ITALIAN queens for sale, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. F. D. No. 3, Ala.

PRICES of my Golden Italian queens this spring will be: untested, $1.05 each; 6 for $5.50; 12 or more, 80c each, with state health certificate. Safe arrival insured. Hazel V. Bonkemeyer, Randleman, R. F. D. No. 2, N. C.

SHE-SUITS-ME queens. Three-banded. $2.00 each. After June 5, $1 each. Send for price list of queens, nuclei and package bees. Free with each initial order, one SAFIN cage. Allen Latham, Norwichtown, Conn.

BUY from shipper farthest north. Order now for spring. Three-frame nuclei, with tested queens, $4.50 each. Best stock, no disease. 20 years' experience with satisfied customers. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—300 colonies of bees in standard 10-frame Root hives, guaranteed free from disease. Two supers for extracting honey for each colony. Location included, have two outyards. Gus Happel, R. F. D. No. 6, Evansville, Ind.

FOR SALE—200 colonies of bees, 1000 shallow extracting supers. Inspection certificates furnished. Also 4-frame automatic extractor, used one season. 35 lbs. thin super foundation, 3⅞x15⅝. 20% discount. R. B. Henders, Dancy, Ala.

IF you want good bright Italian queens by return mail send your order to us. Queens, $1.00 each; $10.00 per dozen; one pound of bees with queen, $3.00; two pounds bees with queen, $4.75. We pay charges. Graydon Bros., R. F. D. No. 4, Greenville, Ala.

ITALIAN bees and queens ready April 1. Three-pound package or three-frame nuclei, with queen, $5.00; two-pound package or two-frame nuclei, with queen, $3.75. Book your orders early to avoid delay. Satisfaction guaranteed. Get my quantity prices before buying. W. E. Buckner, Mt. Vernon, Ga.

BRIGHT American Beauty Italian bees and queens, booking orders for special two pounds of bees on frame emerging brood and honey, queen introduced, $4.75. Untested queens, after March 15, $1.00. Certificate of health and guarantee safe arrival. Tupelo Apiaries, J. L. Morgan, Apalachicola, Fla.

QUALITY AND SERVICE—We have it when it comes to queens. Prices: Untested, $1.00 each; 25 or more, 85c each; 100, 70c each; tested, $2.25 each; 25 or more, $2.00 each; select tested, $2.65 each; 25 or more, $2.25 each. Satisfaction and safe arrival guaranteed. E. E. Salge & Bros., Weslaco, Texas.

FOR SALE—Choice Italian bees in packages or nuclei for delivery April 15 to May 10. We raise and sell only such bees as we use in our own apiaries at Filion, Michigan, the kind that get the honey. We make delivery on date agreed on and guarantee safe arrival. Address to May 10, Sumterville, Ala., later Filion, Mich. David Running.

PACKAGE BEES, NUCLEI AND QUEENS. Highest quality at rock bottom prices; 2-lb. package with young queen, $3.40; 10 or more, $3.30; 2-frame nuclei, same price. Queens, 80c, dozen or more, 75c each. Their quality has never been surpassed. Satisfaction guaranteed. State inspected. Crenshaw County Apiaries, Rutledge, Ala.

FOR SALE—30 colonies bees, 120 supers, 85 10-frame hives, all with drawn combs, 20 hives, 46 supers, 50 comb supers, eight-frame Root goods, painted white, 15 four-colony winter cases, Root extractor, four-basket, excellent condition. Guaranteed free from disease. Sell third cost. J. S. Laughlin, Golden's Bridge, N. Y.

COMBLESS package bees shipped on sugar syrup. Pure Italian stock. With queen, 2-lb. package, 1 to 10, $4.50; 3-lb. package, 1 to 10, $5.50. Without queen deduct $1.00 from each above package. No disease and safe arrival guaranteed. 20 per cent books orders. Reference furnished. John A. Williams, Box 178, Oakdale, La.

GOLDEN Italian queens and nuclei for 1925—the big, bright hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, $1.00 each; 6, $5.00; 12, $10.00; $75.00 per 100; tested, $1.50 each. Two-frame nuclei, with queen, $4.50 each; 10 or more, $4.00 each. Safe arrival guaranteed. E. F. Day, Honoraville, Ala.

FOR SALE—Choice bright Italian queens. I have been building up this strain for the last 21 years for vigorous hustlers, good winterers, gentleness and fine color. These queens will equal the best on the market. Health certificates go with queens. Prices: 1 untested queen, $1.25; 12 untested queens, $12.00; 1 breeder, $5.00. Emil W. Gutekunst, Colden, N. Y.

CAROLINA QUEENS—It has taken me years to produce a strain of bees on which I can give an absolute guarantee of perfect satisfaction. They are gentle, prolific and excellent producers. Untested, $1.00 each; 12 for $10.00; $65.00 per 100; tested, $2.00 each; select tested, $2.25. A trial order will convince you. Carolina Bee Co., W. O. Curtis, Mgr., Graham, N. C.

CRANDALL'S Italian bees and queens are "PRODUCTION-BRED." Try some of them in those big hives and prove it yourself. Our customers, both here and abroad, are sending us some fine reports about them. Ready June 1. Untested, one, $1.00; 12, $10.00; 100, $75.00. Packages and nuclei. Safe arrival and satisfaction guaranteed. Circular on request. Connecticut Valley Apiaries, Berlin, Conn.

OVERSIZE 2-pound packages (2½ pounds when caged) of young hustling, disease-free, Italian bees, with select untested queen, will insure you a rousing colony by the honey flow. These bees are bred right, caged right and delivered to you right, or I make them right. Order early to get shipment to suit your location. Ten per cent cash with order, balance before shipment. One package, $5.25; 12 or more, $5.00 each. Express prepaid. P. M. Williams, Ft. Deposit, Alabama.

THREE-BANDED Italian bees and queens. May delivery. One Root frame honey and brood, 1 good untested queen and 4 pounds bees, $5.50 each. Orders of 10 packages or more, deduct 40c. If additional frame brood and honey wanted, add 70c. Two-frame nucleus, with queen, $3.00; additional frame brood and honey, 70c. Safe delivery guaranteed and government health certificate with each shipment. Order from this advertisement. L. C. Mayeux, Hamburg, La.

BEES AND QUEENS—Two-lb. package of Italian bees, with untested Italian queen, $4.00; 10 or more packages, $3.75 each. Three-lb. package of Italian bees, with untested Italian queen, $4.75; 10 or more packages, $4.25 each. Two-lb. package hybrid bees with untested Italian queen, $3.75; 10 or more packages, $3.50 each. Three-lb. package hybrid bees, with untested Italian queen, $4.25; 10 or more packages, $4.00 each. 10 per cent books your order. Safe delivery guaranteed. Order direct from this ad. H. E. Graham, Cameron, Box 666, Texas.

ST. ROMAIN'S QUALITY BEES for sale. The pure three-banded Italian bees and queens at a very reasonable price. A two-pound package with queen, $3.00; three-pound package, $4.00; four-pound package, $6.00. Orders are booked with 25 per cent down and balance 20 days before shipment. Deliveries to be made between May 15 and July 1, 1925. Some shipments can be made earlier if weather permits. Bees are shipped on a comb of emerging brood and enough honey for feed in transit.. Bees are absolutely free from disease. I furnish health certificate with each shipment. I also guarantee safe delivery and satisfaction. Address John St. Romain, Marksville, La.

THREE-BANDED Italian queens, $1.00 each; $9.00 a dozen. C. G. Ellison, Belton, S. C.

WANTS AND EXCHANGES.

WANTED—8-frame reversible friction-drive extractor in good condition. C. Gault, Buhl, R. F. D. No. 5, Idaho.

FOR SALE—Brooder stoves, or will exchange for package bees. Ralph Williams, Attica, Ohio.

HAVE a Grebe radio set; cost $130. Will exchange for honey, supplies or what? Van Wyngarden Bros., Hebron, Indiana.

MISCELLANEOUS.

2-OZ. sample Vermont maple sugar for six two-cent stamps. W. A. Grover, Bristol, Vt.

GLADIOLI bulbs. Closing out. Bargain. Van Wyngarden Bros., Hebron, Indiana.

GLADIOLI—As a class, we believe Kunderd varieties ahead of any yet produced. Many listed in my free list, priced at discount. Riverside Gardens, Berne, Indiana.

EXQUISITE DAHLIAS—8 different labeled, $1.00; 12 fine, $2.50; 12 novelties, $5.00. Catalog free. Indiana Dahlia Farm, New Albany, Indiana.

HELP WANTED.

WANTED—Experienced beeman to help in commercial beekeeping. State age, wages, weight. Oscar Skow, Dunlap, Iowa.

YOUNG man to work in apiaries. State age, experience and wages expected. Chas. Adams & Son, Greeley, Colo.

WANTED—Young man to help in my apiary of 400 colonies for season of 1925. State age, weight, experience if any in first letter; also wages expected. Archie Breakie, Filion, Mich.

Honey Sells Itself

—If Properly Displayed in Glass

The HA Standard Honey Line Includes Jars of Four Sizes---

An Individual Holds just enough for one—splendid for hotel, restaurant and dining car service.

A 1-2 Pound For the small family — Makes a fine "trial" package. Sure to bring repeat orders.

A One Pound The largest and most popular seller.

A Two Pound For those desiring a larger package.

Let our HA Honey Jars be your Silent Salesmen

Order through our distributors or our main office at Wheeling, W. Va.

Distributors

THE A. I. ROOT CO., Medina, Ohio.

HOFFMAN & HAUCK 1331 Ocean Ave., Woodhaven, L. I.

HAZEL-ATLAS

Honey Jars

IDEAL PROPORTIONS

Carniolans

winter extra well. The past winter has been a severe one. Good wintering is essential to get colonies in condition for an early honey flow. Besides Carniolans are very gentle, very prolific, build up rapidly during the spring and do not swarm excessively if intelligently managed. Ask for my **free paper, "MERITS OF THE CARNIOLAN BEE,"** describing Carniolans more fully and giving helpful suggestions on managing these bees for comb and extracted honey. Later we can supply queens and a limited number of nuclei and packages of Carniolans. Have been selecting and breeding Carniolans for 13 years. Will rear **ITALIAN** queens in a separate yard 12 miles from Carniolans—C. B. Hamilton strain.

ALBERT G. HANN, GLEN GARDNER, N. J.

Lifetime Cypress Hives

BEEKEEPERS' SUPPLIES

Why not purchase our cypress hives this time? They cost you less but will last longer.

We carry a full line of supplies and will take pleasure in quoting you on your needs.

Bright three-banded Italian queens, $1.00 each; 10, 85c each; 100, 75c each.

Write now for our catalog.

Gulf Coast Apiaries
HOUMA, LOUISIANA.

Achord Bees and Queens for May

We have all the orders we can safely take for April shipment. Order now if you can use the bees May 5th and later. Pure three-banded Italians only.

2-lb. pkg. with select young laying queen	$4.75
Five 2-lb. packages	22.50
Twenty-five 2-lb. packages	112.50
3-lb. pkg. with select young laying queen	5.75
Five 3-lb. packages	27.50
Twenty-five 3-lb. packages	137.50

Express charges collect at destination. Safe arrival guaranteed. Inspection certificate and all necessary papers to carry packages through without delay. If packages are wanted by parcel post, add 15c and postage to the price of each. We will advise you cost of package to your postoffice. If wanted without the queens, deduct $1.00 from the price of each package.

Queens

Select young laying queens, $1.00 each, any number. Tested queens, $1.75, each, any number.

Terms 20 per cent with order, balance a few days before shipment. No bees sent C. O. D. Producing and shipping package bees and queens has been our sole business for many years. We have passed the costly and dangerous experimental stage. Your order placed here brings highest value for the money invested. For complete information send for latest price list.

W. D. ACHORD, Fitzpatrick, Ala.

Be Prepared

Beekeepers, send for my 1925 supply catalog. Bargains in all supplies. Early order discounts. Don't delay; send today.

Clarence Erdman
BERLIN, WISCONSIN.

Packages HONEY GIRL ITALIAN QUEENS Nuclei

3-lb. packages with untested Honey Girl queens, combless or with comb, one, $4.50; ten, $42.50; twenty-five, $102.50; one hundred, $405.00. 4-lb. packages with untested Honey Girl queens, shipped only with comb, one, $5.40; ten, $52.00; twenty-five, $126.25; one hundred, $500.00. If tested queens are wanted, add 60 cents per package to prices quoted above. 2-lb. packages with tested Honey Girl queens, combless or with comb, one, $4.20; twenty-five or more, $4.00 each. N. B.—We can begin shipping with tested queens about fifteen days earlier than with untested queens because we produced a large number of queens late last fall for this purpose. Guarantee safe arrival subject to express bad order receipt. Certificate of inspection with each shipment.

Queens, Progeny of Scientifically Selected Pedigreed Mothers

Untested, one, $1.25; ten, $11.50; fifty, $52.50; one hundred, $100.00. Selected Untested, $1.35 each, no quantity discounts. Tested, $2.00 each, no quantity discounts. Beautifully marked selected tested, $5.00. Scientifically selected pedigreed breeding queen, $25.00. Breeding queens are selected with great care and thoroughly tested as queen mothers before we ship them. They are descended from the wonderful St. Romain's Honey Girl breeding queen. SEND YOUR ORDER WHERE YOUR MONEY BUYS THE BEST.

HONEY GIRL APIARIES, HAMBURG, LA.

FORMERLY COTTONPORT HONEY GIRL APIARIES, COTTONPORT, LA.

Get Stung

With Howell's Queens. They produce the bees that gather a profit.

Untested, $1.00 each, or $95.00 per 100. Tested, $2.00 each; extra-select Tested, $3.00.

D. W. HOWELL, Shellman, Ga.
Member Southern B. Q. Assn.

Bright Italian Bees

I guarantee safe delivery and prompt shipments, health certificate with each shipment. I have been in this location since 1911 and have had no disease in my apiary.

1 2-lb. pkg. with untested queen....$4.00
10 2-lb. pkgs. with untested queens..35.00
25 2-lb. pkgs. with untested queens..80.00

Write for prices on larger lots.
10 per cent with order.

M. STEVENSON
WESTWEGO, LOUISIANA.

World's Best Roofing
at Factory Prices
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.
Edwards "Reo" Metal Shingles
have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.
Free Roofing Book
Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183
LOW PRICED GARAGES
Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.
THE EDWARDS MFG. CO.
433-483 Pike St. Cincinnati, O.
FREE
Samples & Roofing Book

450,000 TREES.
200 varieties. Also Grapes, Small Fruits, etc. Best rooted stock. Genuine. Cheap. 2 sample Grape-Vines mailed for 20c. Catalog free. West Hill Nurseries, Inc., Box O, Fredonia, N.Y.

Success!

with package bees depends on just a few fundamentals, any one of which, not present in full measure, is sure to mean failure. We assure you full weight, young bees full of vigor, and each package provided with an untested queen fresh from our queen yards, and backed by the same guarantee as if ordered separately. Delivery when you desire. Terms 10 per cent to book, balance before shipment. We guarantee freedom from disease, pure stock, safe arrival and satisfaction.

2-lb. package with untested queen, $4.50; ten up, $4.00.
3-lb. package with untested queen, $5.50; ten up, $5.00.
Two and three frame nuclei, same prices, respectively.
Untested queens, $1.00 each; $10.00 per doz.; $75.00 per 100.
Select untested, 20c each additional. Tested, $2.00. Breeders, $5.00.
We guarantee health and prompt and safe delivery of everything we ship. A postal brings our folder.

Jensen's Apiaries, Crawford, Miss.

Thagard's Italian Queens

Bred for Quality

Will gather a mammoth honey crop for you. They have stood the test with backlotters and America's largest honey producers. We can fill your order promptly after April 1st.

Untested queens, 1 to 4, $1.50; 5 to 11, $1.00; 12 to 24, 85c; 1-lb. package with queen, $2.90; 25 up, $2.80; 2-lb. package with queen, $4.00. Write for prices in large quantities. Circular free.

The V. R. Thagard Co.
Greenville, Alabama

They are reared RIGHT, from the best of PURE ITALIAN mothers, and guaranteed to give perfect satisfaction. Enough said. Give them a trial.

Untested, 1 or 100.....$1.00 each
Select Untested, 1 or 100.... 1.50 each
Tested, 1 or 100 ..... 2.00 each

Write for descriptive booklet.

MAJORS NORDAN
BOX 113, KIMBERLY, ALABAMA.

(Continued from page 249.)

ever reported came after the heaviest meal feeding I had ever done, and visitors from adjoining apiaries expressed great astonishment to see my hives so crowded with brood when theirs were not.

I used to find quite a lot of solid lumps of hard meal or flour in the combs. The bees seemed almost unable to get it out without cutting out the combs or excavating it and letting it tumble down on to the bottom-board. This was when I used to feed fine white wheat flour; when feeding oatmeal and rye I never noticed any such trouble.

My conclusion of the whole matter is, that whenever there is such a state of affairs that the bees seem greedy for rye flour before natural pollen comes, and when examination at the time shows that their hives contain no pollen, I would most assuredly give them some of the substances mentioned. When natural pollen comes, as soon as the bees fly freely, or when there is pollen enough in the combs, I would not fuss with substitutes.

Grey & Yellow Bees

Try my stock for early breeding, comb building and honey gathering. There are none better for commercial honey producers. Prices as follows: 3-fr. nuclei with queen, $6.00. Tested queens, $2.00. Untested, $1.50.

DIXIE BEEKEEPER

A monthly publication devoted to the interest of beekeepers. $1.00 per year. Sample copy free.

WILDER'S CYPRESS HIVES

Are made for service and satisfaction. A full line of beekeepers' supplies. Write for prices.

J. J. WILDER

WAYCROSS, GEORGIA.

CANDY FOR WINTER FEED

When packing your bees be sure and give them some of this candy. Just what you need for colonies short of stores. Put up in convenient form, easily and quickly placed in hive. A trial will convince you. Send for circular and price.

H. H. JEPSON

237 Park St. Medford 55, Mass.

"THE FLOWER GROWER"

Unique among Monthlies

Luther Burbank Says:

"No other so thoroughly practical, well-edited and generally interesting."

THE FLOWER GROWER is all that the name implies **AND MORE.** It tells all about flowers and it tells many other things of interest to those who aspire to better living conditions and more beautiful surroundings. It teaches **balanced activities, a sane perspective and a better outlook on life.**

Departments for the Rose, Dahlia, Iris, Peony, Gladiolus and other flowers. Queries and Answers, Odds and Ends, Musings, Timely Suggestions, Our Birds, and many other helpful and interesting things. An editorial department and an **EDITORIAL POLICY,** which is strangely lacking in most magazines.

Up to sixty-eight 9 x 12-inch pages. Yearly subscription, $2.00.

Madison Cooper, Editor, 10 Court St., Calcium, N.Y.

MY excellent three-band Italians are bred for honey production.

They are gentle and hardy. Reared from the best mothers obtainable. I will have 1000 mating nuclei in operation by May 1. Safe arrival and satisfaction guaranteed. Queens, Untested, $1.00 each; 12 for $10.00; 25 or more, 80c each. Queen, Tested, $1.50 each; 12 for $16.00. Breeders, $5.00.

JUL. BUEGELER

ALICE, TEXAS

LOOK!

2-lb. pkg. (hybrid bees, Ital. queen) $3.20
3-lb. pkg. (hybrid bees, Ital. queen) 4.00
2-fr. nucleus (hyb'd bees, Ital. queen) 3.60
3-fr. nucleus (hyb'd bees, Ital. queen) 4.25

In addition, allow for a full half-pound of extra bees I always ship. Figure that. Above prices are for 10 or more; for less, add 25c each. These bees are as good as any for the purpose. Remember, "It's all in the queen," and you will get REAL QUEENS. You will also get service and quality. Ship after April 20. 20% books order.

A. J. Heard, Wellston, Ga.

Redpath Raspberry

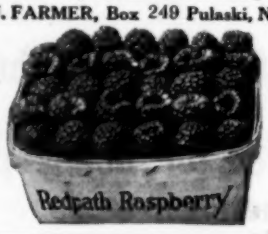
"For the last four years, my Redpath Raspberries have sold for $1,000 per acre," writes D. C. Webster, a Minnesota grower. This new variety is absolutely hardy, even in that cold climate. And it is doing fine here.

On my own farm from ½ acre, we picked 300 quarts of fine Redpath Raspberries in September and October from plants set in April. The second season, gave us a fine crop in July.

A real *red* (not purple) Raspberry, always in demand at top prices. Firm and an excellent shipper. A banner money-maker. Prices: Special Trial Offer, 5 Plants, $1; 25, $3.50; 100, $12; 1,000, $100.

FREE CATALOG of Raspberries, Strawberries and complete line of high-grade nursery stock. Write today.

L. J. FARMER, Box 249 Pulaski, N. Y.



SOUR HONEY DEPT.

To Root and Demuth only:

I aint got much to say this month. Things aint no better. My coon dog's leg what got broke knit crooked and lame, so I took him back atween one evenin and next mornin and tied him in the yard of the man of whose wife I got him. If he can meet me sometime and says anythin about it I'll turkey right up to him and ask him as what kind of a man it is as sells for a coon dog one as don't have straight legs, so I will. He'd no right to sell me a dog as didnt know enough to keep out of under a fallin coon tree and get his leg busted. I aint to blame for that dog's crooked leg nohow, so I aint. So I hold that dog's leg was just as good as crooked when I bought him and I aint prevarricatin when I tell his owner as bove—anyway, not much. Then too my lumber yard boss, Mr. Gooer, said I insulted him in the last Sour Honey Dept. by sayin that largely what he knew was pilin lumber and goin to church. So I have been carryin all the heavy lumber and doin all the meanest jobs around the yard for nigh one

(Continued on page 260.)

KITSELMAN FENCE

"Saved $22.05," says Ivan F. Fisher, New Bethlehem, Pa. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free 100-page Catalog of Farm, Poultry and Lawn Fence, Gates, Posts and Barbed Wire.

KITSELMAN BROS. Dept. 21 MUNCIE, IND.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1925

Untested queens, $1.00 each. Tested, $1.50 each. 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50; nucleus, $1.50 per frame. Additional pound of bees with nucleus, $1.00. No disease; safe arrival guaranteed; bees inspected; never had disease.

J. W. SHERMAN, VALDOSTA, GEORGIA.

4% BANKING BY MAIL

BANKING BY MAIL is a prominent part of our service. You can send **YOUR** deposits to us in the form of checks, money orders, or currency, using registered letters.

THE HOME OF THE HONEY BEE

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO.

E. B. SPITZER, PRES. E. R. ROOT, VICE PRES. H. E. AYLARD, CASHIER

Something New

Patent Pending

A remarkable tool for the handling of frames. No stings on finger tips. Send for circular. Price $2.00. Money refunded if you are not entirely satisfied after ten days trial in apiary.

HALL & SCOTT, Barre, Vermont.

This Ball Bearing
APACHE
Grist Mill

PREPAID FOR ONLY
$8.00

FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and *bring down living cost.* Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.
Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.

BOLENS Garden Tractor

Does Seeding, Cultivating and Lawn Mowing with greater saving of time and effort. Attachments for different jobs are instantly interchangeable. Many indispensable, exclusive features such as the patented arched axle, tool control, instant hitches, etc. A boy or girl will run it with delight.

Write For Catalog

GILSON MFG. CO. 414 PARK ST.
PORT WASHINGTON, WIS.

CHICKS ON LOW TERMS

Baby chicks shipped parcel post prepaid and guaranteed. 20 kinds to select from. Order early and get special prices. Big illustrated catalog and poultry guide free. **Colonial Poultry Farms. Box 931, Pleasant Hill, Mo.**

Costs Only $4.96, Complete

In an hour you can make a better brooder than you can buy. No tools needed but saw and hammer. It will do the work of 4 old hens and do it better. The materials, including heater, cost $4.96.

I want you to try my Brooder and will send you plans for making it, together with a Putnam Brooder Heater, for $4.75; all postpaid. Try the Brooder out and if you don't say it's the best Brooder you ever used, return the Heater in 30 days and get your money back. Your dealer will make you the same offer and guarantee. Ask him, but if he does not carry the Brooder Heater, send me $4.75 and I will mail you a Brooder Heater and plans promptly. Illustrated circular free.

I. PUTNAM
Route 460-B Elmira, N.Y.

$4.75 Post Paid
Burns 10 days without attention

Better Way to Garden

Wonderful New Garden Machine!

You can now have the finest garden possible, without the slow, back-breaking work. Weeds **must** be kept out and the surface broken up to retain the moisture. This marvelous machine makes it easy and quick.

BARKER Weeder, Mulcher, and Cultivator

Simply push a BARKER along the rows (like a lawn mower). 8 blades revolving against underground knife destroy the weeds and **in same operation** chop up the clods and turn the surface crust into a level, porous mulch; also aerate soil. "Best Weed Killer Ever Used." Guards protect leaves. Has shovels for deeper cultivation. A boy can run it and do more and better work than 10 men with hoes. Used by thousands market gardeners, experiment stations, farm and town gardeners. Inexpensive.

FREE BOOK tells how to get best garden results; eliminate hard work. Illustrates and describes Barker; gives prices delivered, etc. A card brings it.

BARKER MFG. CO. David City Nebraska Box 15

Write for this **Free Book**

Thriftiness

is the quality that makes Forehand's Three Bands **surpassed by none but superior to many.**

THRIFTINESS is the result of 33 years' work and study among the bees.

THRIFTINESS is the quality that will help you increase 1925 profits.

Today our thrifty bees are pleasing hundreds of America's best beekeepers.

Thrifty bees are guaranteed to please you.

We can supply you with package bees by express or parcel post and all grades of queens.

Let us mail you a copy of our latest folder, "A Message for You."

W. J. Forehand & Sons

Fort Deposit, Ala.

(Continued from page 258.)

month now. So accordinly to wit I now say Mr. John Gooer, Esq., knows more about lumber than anybody else livin, is a fine man and sure to go to heaven. I will always say this about him if he does right by me about the heavy lumber and slab pilin from now on.

Again my bees is all dead save two swarms and them two aint much stronger than Mr. Coolidge's love for the U. S. Senate and vice versy.

And Mell Pritchard wants to edit this dept. to puff hisself as a fisherman and skunk tamer.

I have more troubles too than a dog's leg gone crooked, foreman John Gooer, my dead bees, and Mell Pritchard's trying to snatch the very pen out my hands. Yes I have. But so many are writin me comfort and also otherwise that I now give way, but sayin agin that things are gettin no better for me fast.

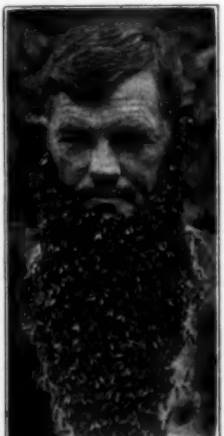
* * *

TO OLD DRONE FROM THE QUEEN BEE.

Poor Old Drone! Or should I have written dear funny OLD Drone? I take my pen in hand to ask you why you to cast asperions—(uh huh, I jus looked that up in Webster's)—on Mr. E. L. Sechrist jus because he said, as you printed in last Gleanins, that that South Sea woman that told that whoppin fish story was brown skinned. Bein leather colored myself, I dont see no good reason why he shouldnt hav a good look at every brown

(Continued on page 262.)

It Will Pay You



to get on our mailing list, whether you expect to buy queens of us or not, as we are planning to send out letters of instruction to all who are on our mailing list, treating of current subjects such as Increase, Requeening, Swarm Prevention, etc. Further than this, we are always glad to answer questions concerning beekeeping in any line with which we are familiar.

Write for our Twenty-fifth Anniversay Catalog, descriptive of our High-Grade Italian Queens.

Jay Smith

Route Three, Vincennes, Indiana

To New York State Beekeepers

From all reports we have had, bees have wintered well. Take good care of them this spring and have them ready for business when the honey flow comes; and when you find you need supplies in a hurry, think of Syracuse with a complete line of Root Quality Supplies. Transportation facilities out of Syracuse are the best—freight, trucks, express, trolleys and parcel post. Post office and express office are open day and night. Your order never gets in too late to ship that same day by parcel post or express if you are in a RUSH.

Mr. C. H. Osborne, of Leroy, N. Y., who has been selling our supplies in Genesee County, on account of injury to himself has had to give up the agency, but we are fortunate in securing Mr. B. F. Trescott, of Pavilion, N. Y., to take his place. Mr. Trescott is an experienced beekeeper and will give you good service. He will be glad to have you call on him at Pavilion and we know you will like him.

Before shipping your beeswax, ask for our price.

A. I. Root Co. of Syracuse

1631 WEST GENESEE ST.,
SYRACUSE, N. Y.

Serves You Best

Root QUALITY
BEE SUPPLIES

WE HAVE TRIED TO ANTICIPATE YOUR BEE-SUPPLY NEEDS AND HAVE ON HAND A CARLOAD OF ROOT'S GOODS. ORDER FROM US AND SAVE FREIGHT.

24-HOUR SERVICE.

THE SCHENECTADY BEE SUPPLY CO.

242 Union St., Schenectady, N. Y.
Telephone 313R.

BEE SUPPLIES THAT *Are Made to* SATISFY

The three points of Rusch Service that are keeping old customers satisfied and bringing new ones are:

RIGHT PRICES,
REAL SERVICE,
HIGHEST QUALITY.

A trial order will convince you. Write for our new 1925 catalog.

A. H. Rusch & Son Co.
Reedsville, Wisconsin.

Better Service for the Buyer of Bee Supplies

is one of the principal aims of our business. We believe, therefore, that our greatest usefulness lies in supplying WHAT you need, WHEN you need it.

We are manufacturers and distributors of just a little better bee supplies, just a little higher grade —SECTIONS, Bee Hives and Frames—in fact, everything the beekeeper needs.

Write for our free illustrated catalog and price list today.

AUGUST LOTZ COMPANY
BOYD, WISCONSIN.

Beekeepers' Supplies

Finest Quality
Right Prices
Prompt Service
Courteous Treatment

We solicit your patronage

Wm. Baldwin
24 N. Erie St., Toledo, Ohio

Authorized Distributor for
THE A. I. ROOT COMPANY.

(Continued from page 260.)

skinned queen he sees. I callate he wouldnt be much of a bee man if he didnt.

An talkin of brown skin makes me think Im glad us American females dont have to cover up our tanned skinns no more than the South Sea queens does, providin we're nice lookin enough we dont want to. An you must be a powerful OLD drone if you dont like to see as much as you can of every good lookin queen.

Dont you know, you funny, buzzin old thing, that us females of the species consider an Old drone about the most uselessest thing in the hive!

An, say, if you dont right soon tell us about Mel Pritchard and Huber Root transferrin them bees, Ill think you are like Joe Carroll tellin why he wont imitate 4 Hawaiians. An them Hawaiians is leather colored, too.

Now, if you dont print this, I will write you another time. QUEEN BEE.

Mr. E. L. Seehrist didn't sign the above to wit, but as who did is payin so much attenshun to brown skins and bathin beaches, she may be he. Very likely.

Other friends, including W. E. Reim of

(Continued on page 265.)

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.
CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D.C.

RUSSELL'S SUPERIOR QUALITY QUEENS

As we have discovered the secret of mating queens to choice drones, we believe we are justified in saying "SUPERIOR QUALITY" QUEENS. 25 years' experimenting has brought us to the position where we can give you the very best obtainable in three-band bees. No order too large, none too small. Guarantee safe delivery. Free from disease. We never had a diseased colony in our yards.

2-frame nuclei from Roxbury, $5.00 each, as long as they last. Certificate with each package of nuclei, or queen.

QUEENS, $1.00 each in April; May, $1 each, 3 for $2.25; breeders, $10. We can supply either Carniolan, Golden or Italian.

The Russells' hives are crowded,
The Russells' hives are jammed.
The bees that fill the supers
Are from the F. M. Russell strain.

F. M. Russell Co., Roxbury, Ohio

NEW CATALOG READY

BEEKEEPERS' SUPPLIES

Root's Goods of High Quality. Three-ply foundation, standard stock of supplies kept on hand for prompt shipments. Send us your inquiries and orders early for quick action.

J. NEBEL & SON SUPPLY CO.
Montgomery County High Hill, Missouri

Superior Italian Bees and Queens, Delivered

CHEAP IN PRICE BUT NOT IN QUALITY

Two-pound packages, with selected queens, 1 to 4, $4.75; 5-15, $4.60; 16-24, $4.40; 25-49, $4.25; 50-99, $4.00; 100 and up, $3.90. Service, quality, and no disease guaranteed.

W. C. Smith & Co., Calhoun, Alabama

YOU BUY *BEES AND QUEENS* IN ONE OF TWO WAYS

? *On Trust or On Certainty* **4-hands**

You either know you are going to get good queens and bees or you hope you are. Hope may result in poor stock, delay, loss of colony and no honey. Knowledge means first-class stock, prompt delivery, courteous treatment, satisfaction and profit.

When you mail your order to FOREHAND you know you are buying QUEENS AND BEES on certainty. How about your next order?

Untested queens, 1 to 12, $1.00 each; 12 to 25, 85c each. One lb. bees with queen, $3.25; two lbs. bees with queen, $5.25; three lbs. bees with queen, $6.25; 10 or more packages of either, 25c less per package. POSTAGE PAID ON BEES AND QUEENS. Satisfaction and safe delivery guaranteed. REMEMBER THE PRICE IS PREPAID ON PACKAGE BEES. Write for prices on large lots.

N. FOREHAND -:- GONZALEZ, FLORIDA

Carniolans and Caucasians

merit your trial this season. Get our prices before placing your order. We offer Carniolans from direct-imported Kofler and Ambrozic strains, as well as our own selected stock. **CAUCASIANS** bred from newly imported stock and the famous QUINN strain.

We are prepared to supply you with package bees for the season. Let us quote you prices. **ITALIANS.** We can supply you the best in three-banded stock. **Get our 1925 circular,** which gives full particulars of everything. It is free upon application.

W. A. HOLMBERG, Rt. 2, Turlock, Cal.

For April and May Delivery

I have a bright strain of three-banded bees and queens that are giving service wherever they go. Place your order with me and you will receive prompt service and entire satisfaction. Read what others say about my bees.

"Your queens are just wonderful; on a poor honey flow here this year, my pound packages gave me an average of 150 pounds of extracted honey each. I have never had pound packages do so well before and I have had lots sent up from the South." Name on request.

Price list. I pay transportation charges.
1-lb. package with untested queen..$3.25 each
2-lb. package with untested queen.. 5.25 each
3-lb. package with untested queen.. 6.25 each

25 cents less per package on shipments containing 25 or more packages. 50 cents less per package on shipments containing 50 or more packages.

Sel. Unt. queens, $1.00 each; 10 for...$ 9.00
Sel. tested queen, $2.00; 10 for..... 17.50.
Safe arrival, prompt delivery and entire satisfaction guaranteed.

Hayneville Apiary Co.

Hayneville, Alabama

Mack's Queens

Win the admiration of all those who use them. A trial order will convince you also. Select Untested only $1.00 each; $10.00 a dozen; $75.00 per hundred. Every queen guaranteed perfect and to give complete satisfaction. Booking orders now.

HERMAN McCONNELL
(The Bee and Honey Man)
ROBINSON, ILLINOIS.

Citronelle Package Bees

Bright Italian bees and queens delivered promptly after April 10 over direct lines to the North. Prices are F. O. B. shipping point.

Untested queens furnished in packages. 2-lb. packages, $4.20 each; 10 to 25, $4.00 each; 25 to 100, $3.80 each. 3-lb. packages, $5.20 each; 10 to 25, $5.00 each; 25 to 100, $4.80 each.

QUEENS.

Untested, $1.00 each; 12 for $10.00, or 100 for $75.00. Select untested, $1.20 each; 12 for $11.00, or 100 for $85.00. Tested queens, $1.50 each; breeders, $5.00 to $25.00 each.

Health certificate with each shipment. Satisfaction and prompt service guaranteed.

Citronelle Apiaries
Citronelle, Ala.

-:- -:- *QUEENS, $1.00* -:- -:-

Mr. Beekeeper, if you want the very best queens and bees with prompt, efficient service at prices that you can afford to pay, order NORMAN BROS. queens and bees. Our queens and bees' service and prices meet these requirements. Mr. Beekeeper, when you introduce NORMAN BROS. queens you can feel assured you have a queen that is beautiful and will do her duty, and as good as any in the U. S. A., which is backed by years of improving and selecting from the finest mothers and mated to drones that are selected. Our bees are hardy, prolific, disease-resisting and honey-gatherers. Orders booked with one-fourth down, balance before shipment is desired. Place your order with us. We ship when you want them.

PRICES FROM APRIL 1st to JUNE 1st.

Untested: 1, $1.00; 6, $5.50; 12, $10.00; 100, $72.00. Select Untested: 1, $1.20; 6, $6.50; 12, $12.00; 100, $90.00. Tested Queens: 1, $2.00; 6, $11.00; 12, $21.00. Sel. Tested, $2.50 each. One 2-lb. package with select untested queen, $4.00 each; 12 or more, $3.80 each. One 3-lb. package with select untested queen, $5.50 each; 12 or more, $5.20 each. GUARANTEE—We guarantee pure mating, safe arrival and satisfaction in U. S. A. and Canada.

NORMAN BROTHERS APIARIES, NAFTEL, ALABAMA.

Mayeux's 3-Banded Bees and Queens

Last year we sold four thousand packages, the largest number ever known of a Louisiana beekeeper, with not more than 2% loss. We are better equipped this year—have more bees to draw from. Each package contains a Select Untested Queen, with a comb of honey, natural feed for transit. Each package goes out with a government health certificate. 15% down, balance at shipping time. Will start shipping April 15.

10	3-lb. packages	$ 45.00
25	3-lb. packages	108.75
50	3-lb. packages	212.50
100	3-lb. packages	400.00
10	4-lb. packages	52.50
25	4-lb. packages	127.50
50	4-lb. packages	249.70
100	4-lb. packages	475.00

Remember, each package includes a select untested 3-banded queen. A 5-lb. package with tested queen for breeding purposes, with two frames brood, $8.00 each.

C. A. Mayeux

HAMBURG, LOUISIANA.

We Are Ready to Serve You

Owing to the exceptionally early spring, our colonies have built up extra strong. Our queen yards are under good headway, our shipping boxes are cut and nailed, and we can make prompt shipment at any date desired after the 15th in any quantity you may desire. Prices with select untested Italian queen:

2-lb. package—1 to 10 each, $4.25; 10 to 50, each, $4.00; 50 to 100, each, $3.90; over 100, each, $3.75.

3-lb. package—1 to 10 each, $5.25; 10 to 50, each, $5.00; 50 to 100, each, $4.90; over 100, each, $4.75.

4-lb. package—1 to 10, each, $6.25; 10 to 50, each, $6.00; 50 to 100, each, $5.90; over 100, each, $5.75.

Above prices F. O. B. Macon, Miss. 10% to book order, balance just before shipment. Nuclei at same prices as packages. Capacity, 2000 packages or nuclei. Our motto is, "100 cents of value for each dollar received." Try us and you will find that we live up to it.

Geo. A. Hummer & Sons

Prairie Point, Miss.

SHIPPING POINT, MACON, MISS.

IMMEDIATE SHIPMENT

QUEENS - PACKAGE BEES - QUEENS

APRIL 1 TO 15—BY RETURN MAIL OR EXPRESS

SAVE THAT QUEENLESS COLONY.—There are no better queens than Berry Queens. One of our customers keeps about 800 colonies and says: "Our best colonies are headed with Berry queens. One of these colonies headed by a Berry queen made 715 pounds and a number of other colonies 600 pounds and better of surplus honey."—Indiana (name on request).

Price List of Queens and Packages for Immediate Shipment.

Select Untested, $1.00 each; 12 or more, 90c each. Select Tested, $2.00 each; 12 or more, $1.75 each.

1-lb. package with select queens, $3.25 each; 12 or more, $3.00 each. 1½-lb. packages with select queens, $4.00 each; 12 or more, $3.75 each. 2-lb. packages with select queens, $5.25 each; 12 or more, $5.00 each; 3-lb. packages with select queens, $6.25 each; 12 or more, $6.00. For Manitoba and Western Canada, add 50c for each package.

M. C. Berry & Co., Box 697, Montgomery, Ala.

Why Tolerate Those Non-Producers Again This Year?

Every spring you unpack a number of colonies too weak to build up for the honey flow. You nurse them through the season and hardly get them built up strong enough for winter quarters. Why not introduce a 2-lb. package of bees and a young high-grade Italian queen and make them above the average in production?

Prices on Package Bees as follows: 1-lb. pkg. with untested queen, $3.00; 10 or more, $2.65 each; 2-lb. pkg. with untested queen, $4.25; 10 or more, $3.95 each; 3-lb. pkg. with untested queen, $5.75; 10 or more, $5.35 each.

3-banded Italian queens: Untested, 1 to 11, $1.00; 12 to 24, 85c; 25 to 100, 75c; 100 or more, 70c. Select Untested, 1 to 11, $1.20; 12 to 24, 95c; 25 to 100, 85c; 100 or more, 80c. Tested, 1 to 11, $2.00; 12 to 24, $1.75. Select Tested, 1 to 11, $2.50; 12 to 24, $2.25.

Health certificate with each shipment, safe arrival and satisfaction guaranteed.

JOHN C. HOGG, RAMER, ALA.

(Continued from page 262.)

Wisconsin, J. B. Kirkhuff of Pennsylvania, Robert Mead of Vermont will have due attenshun in our next. R. B. WiLson of Ithaca University sends a challenge to meet him and Jim Hambleton on Esopus Creek, N. Y., to fish it out to the finish on or about April 1. If the ice would be out of your creek by Apr. 1, Mr. WilLson, I might come and show you and Jim H. up just as oughter be. But I aint comin to have you and Jim lead me down to the ice and say "April Fool," so I aint. When you two darst fish in some unfroze water let me know. I'll be there with flys on my hat you bet. But wait till your creek unfreezes anyway. OLD DRONE.

Package Bees

QUALITY — SERVICE
None better at any price.
Illustrated circular free.

Van's Honey Farms, Hebron, Indiana

850,000 GRAPE-VINES

66 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine. Cheap. 2 sample vines mailed for 20c. Descriptive catalog free. West Hill Nurseries, Inc., Box C, Fredonia, N.Y.

W. H. Laws'

Bees and Queens

Untested queens, each, $1.00; 12 for $10; 100 for $80. Tested, each, $1.50; 12 for $15; 100 for $100. Breeding queens, the best to be had at any price, $5.00 each.

I thank you for the rush of orders that have come for package bees, and this is to announce that I am booked up on all the orders I can fill for bees before June 1.

Health certificate with every shipment of bees and quens. There is no disease of any kind in this part of Texas. I breed only the light three-banded Italians.

Satisfaction Guaranteed in Every Particular. Address

W. H. LAWS

BOX 505. WHARTON, TEXAS.

A SUPERIOR QUALITY AT LESS COST

SUPPLIES

A SUPERIOR QUALITY AT LESS COST

DON'T BUY YOUR BEE SUPPLIES UNTIL YOU HAVE OUR PRICES. SEND US A LIST OF YOUR NEEDS AND WE WILL QUOTE YOU PRICES THAT WILL ENABLE YOU TO SAVE MONEY.

GLASS AND TIN HONEY CONTAINERS

2½-pound Cans, in crates of 100	$4.00 a crate
5-pound Pails, in crates of 100	7.00 a crate
10-pound Pails, in crates of 50	5.00 a crate
60-pound Tins, new, 2 tins per case	.90 a crate
60-pound Tins, used, 2 tins per case	.25 a crate
160-pound kegs	1.20 a keg

GLASS JARS WITH GOLD-LACQUERED CAPS

8-ounce capacity, 2 dozen per carton	.90 per carton
16-ounce capacity, 2 dozen per carton	1.20 per carton
3-pound or quart, 1 dozen per carton	.90 per carton

HOFFMAN & HAUCK, Inc., Woodhaven, New York

Beridon Italian Bees for 1925

April and May Shipments

If it's bees you want, now is the time to order. April is here. Every package contains a frame of brood and honey, which insures safe delivery and makes the bees at home on arrival. A certificate of health accompanies each shipment.

2 lbs. bees with untested Italian queen, $3.50; 3 lbs bees with untested Italian queen, $4.25; 4 lbs. bees with untested Italian queen, $5.00. The above prices are on orders for one to ten packages. If you order ten or more packages, deduct 25c per package.

Nuclei, same price as package bees. Safe delivery and satisfaction guaranteed. Shipments begin the 10th of April. 25% with order, balance just before shipment.

E. J. Beridon, Jr.
Hamburg, La.

ITALIANS

Packages --- Queens --- Nuclei

Vigorous three-banded stock from the best American honey-producers. We give you prompt shipment, young workers, young queens, and cheap transportation by quickest delivery from Texas to northern points. No disease. Package bees combless, shipped with sugar syrup, the best food for bees in confinement. Nuclei on the very best combs, safe to buy, as they have never had disease of any kind. We allow extra weight of bees because of the honey they contain when packed. We have the bees, equipment and experience. Read what the express agent here says: "Baughn Stone has shipped thousands of pounds of bees through this office the past three years, and no claim has been made by him or any one purchasing bees of him. He is very efficient in his methods of packing for shipment."—M. D. Vaughan.

Two-pound package with queen, $4.00; without queen, $2.50; if transportation charges are to be prepaid by me, add 50c per package. No bees prepaid into Canada. Two-frame nucleus with queen, $4.00; three-frame nucleus with queen, $5.00. No nuclei prepaid. Queens, $1.00. 5% discount on packages or queens in lots of 50 or more. 25% required to book your order, balance ten days before shipment is to be made. Shipping begins April 20. State inspector's health certificate accompanies each shipment. Send in your orders at once. We will not disappoint you—neither will the bees.

Baughn Stone, Clarksville, Texas

Tons of Package Bees

Shipment starts April 10. 20 per cent books your order, balance a few days before shipment. No bees or queens sent C. O. D., parcel post or on credit. Will not book more orders that I can fill. Shipment made as near date set for shipment as weather will permit.

1 to 10 2-pound packages of bees, $3.25 each; 3-pound packages of bees, $4.25 each.
10 to 25 2-pound packages of bees, 3.00 each; 3-pound packages of bees, 4.00 each.
25 and up 2-pound packages of bees. 2.75 each; 3-pound packages of bees, 3.75 each.

To above add price of queen wanted in each package. Untested, 1, $1.25; 6, $6.50; 12, $12.00; 50, $45.00; 100, $80.00. Select Untested, 1, $1.50; 6, $8.00; 12, $15.00; 50, $50.00; 100, $90.00. Tested queens, $2.00 each. Select tested, $3.00 each.

W. O. Victor, Uvalde, Texas

If you wish package bees, nuclei or queens,

You Should Let Us Book Your Order Right Now

We give you choice of an **ITALIAN, GOLDEN** or **CARNIOLAN "QUALITY QUEEN," with each package or nucleus. Full weights,** good quality and prompt service. If you have not received our price list, write for it.

AULT BEE COMPANY

513 HOUSTON BUILDING. SAN ANTONIO, TEXAS.

European Foul Brood Easily Stopped

More Beekeepers Using This Plan

Just Feed B-H to Bees

This safe, easy way has been found a specific for European Foul Brood by authorities and beekeepers. Fed in sugar syrup, it is easy to use and costs but a few cents per hive for the season.

STOP YOUR LOSSES THIS SEASON

MONEY BACK IF NOT SATISFIED

Read What Users Say!

In 1923 European foul brood ruined three of my finest colonies. In the spring of 1924 I fed B-H and have not had a trace of the disease.—J. B. Riggle.

We are surely satisfied with the results and can not praise B-H too highly, because it pulled us out of a bad mess.—Dr. R. VanOrman.

I surely can recommend B-H to beekeepers that have European foul brood.—C. R. Williams.

I used your B-H to clean up European foul brood. Am satisfied with results. I don't find any of the disease now.—J. E. Patton.

Send for Free Bulletin

Write name and address on coupon below. Brings free bulletin on B-H for European foul brood.

General Laboratories, Dept. C., Madison, Wis.

Please send me free bulletin on B-H for European foul brood.

Signed .....

Address .....

GOLDEN ITALIAN QUEENS BRED FOR BUSINESS

Only one grade select. Safe arrival and satisfaction guaranteed.

Untested, 1, $1.00; 12, $10.00. Tested, $2.50 each.

1-lb. pkg. of bees and untested queen, $3.00; 2 lbs., $5.00. All mail charges paid.

E. A. SIMMONS - - GREENVILLE, ALABAMA.

Write for Book Today

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Wagon parts of all kinds. Write today for free catalog illustrated in colors.

ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

Queens! Queens!

The old reliable SHAW line-bred Italian queens, bred by the oldest queen-breeder in the South, under the most improved methods, for, first, prolificness and productiveness; second, purity, gentleness and beauty; last, but not least, **non-swarming qualities.** None better! There may be as good. This strain of Italian bees has given universal satisfaction for the last 45 years.

Tested queens, $1.50; untested, $1.00; after June 15, tested, $1.00; untested, 75 cents.

SHAW & RAMSEY
LOREAUVILLE, LOUISIANA.

VERMONT BEEKEEPERS

Freight paid to Brattleboro, Vt., on

Root Quality Bee Supplies

SEND YOUR ORDER NOW.

F. H. Coombs & Sons
BRATTLEBORO, VT.

HONEY PAILS

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
WILKES-BARRE, PENNA.

Save Dollars

ON BEE HIVES AND OTHER EQUIPMENT, BY SENDING US A LIST OF YOUR WANTS. GET OUR SPECIAL PROPOSITION ON BEE HIVES. WE CAN SAVE YOU MONEY.

A. G. WOODMAN CO., Grand Rapids, Mich.. Dept. 34

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies. Write for our terms and prices.

"Falcon"

Supplies--Queens--Foundation

W. T. Falconer Mfg. Company
Falconer, New York (near Jamestown)
"Where the best beehives come from."

Ask for catalog. *Booklet, "Simplified Beekeeping for Beginners," free.*

Root Quality Bee Supplies

in St. Louis District

PROMPT SERVICE — SAVE FREIGHT

We carry a complete line at factory prices. Send for 64-page catalog.

Root QUALITY —BEE SUPPLIES—

O. G. RAWSON

3208 Forest Place
East St. Louis, Illinois

Root QUALITY —BEE SUPPLIES—

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

Leahy Mfg. Co., 95 Sixth St., Higginsville, Mo.

J. W. Rouse, Mexico, Missouri; W. R. Perry Company, Omaha, Nebraska; Albert M. Hunt & Sons, Goldthwaite, Texas, Distributors.

Do "Superior" Supplies Satisfy?

Belliston Says So

In a recent interview with Mr. Wilford Belliston, of the firm of Belliston Brothers, operating more than 1,000 colonies of bees at Nephi and Myton, Utah, he stated that he has always been an ardent supporter of "SUPERIOR" supplies, and especially "SUPERIOR" FOUNDATION.

"We have no sagged or warped combs," he told us. **"No secrets at all. Just your SUPERIOR foundation and careful wiring."** Virtually all combs in Belliston apiaries were drawn from "SUPERIOR" foundation. They also use our new "SUPERIOR" frame wire, the strongest wire on the market.

To Our Friends in the Northwest

We are pleased to confirm recent announcements in the bee journal "BEES AND HONEY" (published at Seattle) to the effect that we have established a branch in Seattle, located at 524 First Avenue South. In opening this branch, we have taken over the bee supply department of the Chas. H. Lilly Co., of Seattle and Portland. Mr. Geo. W. York, former Editor of the "American Bee Journal," and now Editor of "BEES AND HONEY," is Branch Manager. Tell him your troubles and your needs. He is ready to serve you.

Superior Honey Company, Ogden, Utah

IDAHO FALLS, IDAHO; LOS ANGELES, CALIFORNIA; SEATTLE, WASHINGTON; MANHATTAN, MONTANA; DELTA, COLORADO.

Our 1925 catalog is ready. If you have not received your copy, please write us.

Attention Beekeepers!

Last year I suffered a very heavy loss in a bank failure. In order to raise some ready money, I sold my bees at a great sacrifice during the past season. I succeeded in my purpose, having received orders for more bees than I could supply, but on footing up my business at the close of the season, I found that expenses just about balanced receipts, and in order to keep up the quality of bees and queens furnished, I am forced to raise prices slightly for another season. I quote the following prices for 1925 delivery:

1 2-lb. package with untested queen	$4.25	1 3-lb. package with untested queen	$5.25
10 2-lb. packages with untested queen	37.50	10 3-lb. packages with untested queen	45.00
25 2-lb. packages with untested queen	90.00	25 3-lb. packages with untested queen	108.75
50 2-lb. packages with untested queen	172.50	50 3-lb. packages with untested queen	212.50
100 2-lb. packages with untested queen	320.00	100 3-lb. packages with untested queen	400.00

2 and 3 frame nuclei at same prices as packages. Tested queens, 50 cents extra.

I have been in the bee business for over 15 years and have the best stock of three-band Italian bees I have been able to purchase or breed. There has never been any disease in this section of the State and the State Inspector advises me that Georgia is now entirely free of foul brood. Certificate of State Inspector with each shipment. I guarantee safe delivery and will replace or refund on receipt of bad order report from the express agent at point of delivery. I do not recommend shipment by parcel post, as I have found same unsatisfactory. While the majority of all shipments go through in good order, there are a few losses and I have no redress against the Government, no matter how careful I have been in making up the shipment. My records show that 96 per cent of all shipments made by me the past season went through in first-class condition.

I can make shipment at any time after April 15th, and have around 700 colonies from which to draw. I expect to need all of the early queens I can rear for packages and will not be in position to furnish queens alone until late in the season. I will not overbook and suggest that you place your orders early.

I have been local representative for R. G. Dun & Co. for nearly 20 years and refer to any bank or banker in this section of the State.

Hoping to be favored with your orders, I remain, yours very truly,

N. L. Stapleton, Colquitt, Georgia.

ITALIAN QUEENS

For 1925 **OUR OLD RELIABLE THREE-BANDED ITALIANS** will be shipped from one of the largest and best equipped queen-rearing yards in the **SOUTH**. Since enlarging our queen-rearing yards we are prepared to put out double the amount of **HIGH GRADE** queens as heretofore and feel that we are in a better position than ever to fill all orders on time. We ship thousands of queens all over the U. S. and Canada every year. Our bees have a reputation as honey-gatherers. They have made a hit with northern beekeepers for their hardiness and ability to build up strong colonies in early spring. Orders booked for one-fourth cash, balance before delivery. Safe arrival guaranteed in the U. S. and Canada. No disease. Circular and price list free.

Prices for April, May and June: Untested, $1.25; 6, $6.50; 12, $12. Tested, $2.50; 6, $14.00; 12, $27. Select Untested, $1.50; 6, $8.00; 12, $15.00. Select Tested, $3.00 each.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

Our $200 Queen is Dead

But we are breeding from the best of her daughters and granddaughters. Repeated high production records prove the value of our red clover strain. The tongues of bees from our breeders measure 4-100ths of an inch longer than those of average bees.

Prices on three-band leather colored bees and queens for shipment after April 15: 1 2-lb. package with untested queen, $5.25; 12 2-lb. packages with untested queens, $59.70. For delivery after May 5, deduct 25c per package. Write for circular and complete price list. Also prices on quantities. 25 per cent with order.

We guarantee safe delivery, freedom from disease and perfect satisfaction or your money refunded. We have 800 colonies to draw from and use 1000 nuclei.

J. M. Cutts & Son
R. F. D. 1, Montgomery, Ala.

Townsend's Bulletin No. 20

February, down here on the Gulf, has been as warm as summer in the North. Bees have been flying every day, and willow and fruit were in blossom and the bees have bred up to the swarming-point during the middle of winter. This has given me a fine opportunity to study the disposition of the SHAW "line-bred" strain of bees. Day after day I have been among these bees, never wearing a veil and not a single bee has ever followed me around. What a contrast between these bees and some I have handled! There is no more likelihood of getting stung by cross bees in the air than one would among his poultry. The SHAW bees do not follow one and sting in the air. To those who are timid among bees, I offer the SHAW strain as one that can be handled without fear of stings, with fair, intelligent handling.

I still have a good stock of all grades of breeding queens for early May delivery, and will be pleased to book orders for breeders for any one who is in need of fine stock to improve his bees. I quote SHAW "line-bred" leather-colored three-banded Italian breeding queens as follows:

XXX Breeding queen .....$10.00 each
XX Breeding queen ..... 8.00 each
X Breeding queen ..... 6.00 each

If you buy a XXX breeding queen, you can have a choice of the yard. They are same as I breed from, and the best money can buy. If you buy a XX queen you will get about as good a queen as the XXX, only her drones may not quite all have three bands. The X queen will be a breeder for one who is not so exacting, but will be well worth the money.

Besides breeding queens, I will offer two hundred 2-frame nuclei of genuine SHAW bees, to be headed with a genuine SHAW tested queen, for spring delivery. To those who would like to introduce some "better bees" into their yards, I offer these as the best that money can buy. I offer them as long as they last, at only $5.00 each, to go by express, purchaser paying transportation charges. Safe arrival guaranteed. There has never been disease nearer than one hundred miles of Loreauville.

I can also furnish a limited number of 2-lb. packages of bees at $3.75 each and the 4-lb. size at $5.00 each in lots of ten or more. These packages will be shipped on a comb of hatching brood containing honey to last them during transit, and will contain an untested queen in each package at that low price. There has been absolutely no disease nearer than one hundred miles of where these bees will be shipped from. A real buy.

Here is a real bargain: One thousand 3-frame nuclei combs on wired foundation, Moore strain of Italians. Do you know? I have bought this lot so I can sell them for only $4.00 each, in lots of ten or more. They are shipped direct from my breeder in Georgia. Health certificate with this lot of bees and my breeder guarantees safe delivery. These nuclei ought to be better and bring in more honey than wintered-over swarms in the north. They will surely make the purchaser some good money. Do not let this opportunity slip by. Some money in advance books your order. Address E. D. Townsend, Loreauville, La., "where the good queens come from."

The Best Place to Buy Package Bees

IS WHERE RELIABILITY, BEST QUALITY, PROMPT SERVICE AND SQUARE DEALING ARE THE ESSENTIAL PRINCIPLES, AND WHERE GUARANTEES ARE WORTH SOMETHING.

The above is the foundation of my business and shall be maintained. From those who have not heretofore been satisfied with their purchases of package bees, I invite the most rigid investigation of my business and business methods. I guarantee to satisfy you, else will promptly refund your money. Frequently letters are received like this: "Your price is a little higher, but am sending you the order as am assured of receiving my bees on time."

DELIVERED PRICES TO JUNE 1st, EITHER BY PARCEL POST, POST-PAID OR PREPAID EXPRESS.

1-pound package, including select untested queen.....$3.50
2-pound package, including select untested queen..... 5.25
3-pound package, including select untested queen..... 6.25
10 or more packages, either size.....25c per package less.

If queenless packages are desired for strengthening weak colonies, deduct $1.25 per pkg.

THREE-BANDED LEATHER-COLORED ITALIAN QUEENS.

1 select (one grade) untested queen.....$1.25
5 select (one grade) untested queens 5.50
10 select (one grade) untested queens 10.00
Select tested queens each..... 2.00

Safe arrival of bees and queens, pure mating and perfect satisfaction guaranteed. Furthermore, I make good my guarantee. 10 per cent cash to book an order, balance just before shipping. Will ship on the day you name, having the bees, men and equipment to handle orders promptly. Should you find a queenless colony this spring, send to me for a young queen to save them. I will not disappoint you. Health certificate will accompany each shipment. A trial order will convince you I have the highest quality of bees and queens. Shipping begins April 1.

JASPER KNIGHT, HAYNEVILLE, ALABAMA

Getting Ready for Spring?

Are You Interested in----

—**Buying your bee supplies?** We sell Root's goods only. Send for our catalog.

—**Three-ply foundation.** The best yet. Send for circular.

—**Hutzelman's Solution** for treating combs infected with American foul brood. Ask for circular with prices.

—**Having old combs rendered into wax.** We do it. Prices on application.

—**Selling your beeswax.** We want yours for cash or trade.

M. H. HUNT & SON

510 North Cedar St. **LANSING, MICH.**

The Alcohol-Formalin Solution

Has stood the severest tests throughout the past four years.

It has passed tests where water-formalin solutions and other water solutions have frequently failed.

Comparative tests in my own apiaries have shown that water disinfectants frequently give rise to recurrences of American foul brood.

Save your infected combs by disinfecting with

Hutzelman Solution

Patented Oct. 14, 1924.

For full information ask your dealer or write to

J. C. HUTZELMAN, M. D., GLENDALE, OHIO

What Root Quality Queens Did

EVERY COLONY OF GEO. JACOBSON'S APIARY AT KANKANNA, WIS., HEADED WITH A ROOT QUALITY QUEEN.

QUEEN PRICES APRIL 15 TO OCTOBER 15.

Quantity:	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or over.
Untested	$1.50 ea.	$1.35 ea.	$1.25 ea.	$1.10 ea.	$1.00 ea.
Select Untested	2.00 ea.	1.80 ea.	1.70 ea.	1.55 ea.	1.45 ea.
Tested	2.50 ea.	2.25 ea.	2.10 ea.	2.00 ea.	1.85 ea.
Select Tested	3.00 ea.	2.70 ea.	2.55 ea.	2.40 ea.	2.25 ea.

	1 to 9 pkgs.	10 to 24 pkgs.	25 or more.
2-pound package of bees	$5.00 ea.	$4.50 ea.	$4.00 ea.

WE ARE BOOKING ORDERS NOW

The A. I. Root Company, Medina, Ohio

Superior Italian Bees & Queens

Reasons worth your consideration why we can handle your order:

WE ARE RESPONSIBLE
WE HAVE THE EQUIPMENT (2700 colonies Italian bees.)
WE HAVE THE EXPERIENCE (We ship thousands of pkgs. and queens

Write us what your requirements are and let us advise you exactly what we can do.

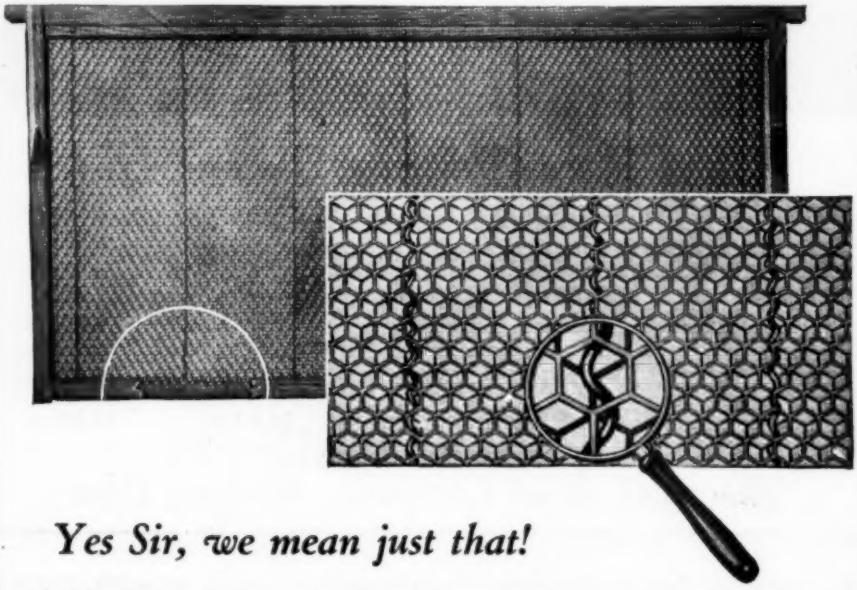
—— PRICES ——	One.	Ten.
Two-pound packages, with queens	$4.50	$4.00
Three-pound packages, with queens	5.50	5.00

Durable Cypress Supplies

100 cypress hive bodies, with frames, dovetailed	$110.00
100 shallow extracting supers, with frames	70.00
1,000 white pine Hoffman frames	45.00
1,000 shallow extracting frames	32.00

The Stover Apiaries, Mayhew, Miss.

Try it for Twenty Five Cents



Yes Sir, we mean just that!

A full sheet of Dadant's Wired Foundation in a Slotted Bottom-bar Frame, sent to any address in the United States, postpaid, for 25 cents.

For two years you have read of the remarkable results in good combs from Wired Foundation. How it reduces or eliminates the cost and labor of hand wiring — makes comb without sag — gives the queen unrestricted laying freedom — increases the brood area — insures stronger colonies, etc.

So rapidly has Wired Foundation been adopted, that large beekeepers, using it, are now scattered all over the country. It does not take them long to sell it to their neighbors.

As a result there is a great demand for a usable sample of the foundation. This offer makes it easy for you to try it at little expense. Send for a sample now before the season is too far advanced.

Read what M. C. Tanquary says about Wired Foundation on page 212 of this issue.

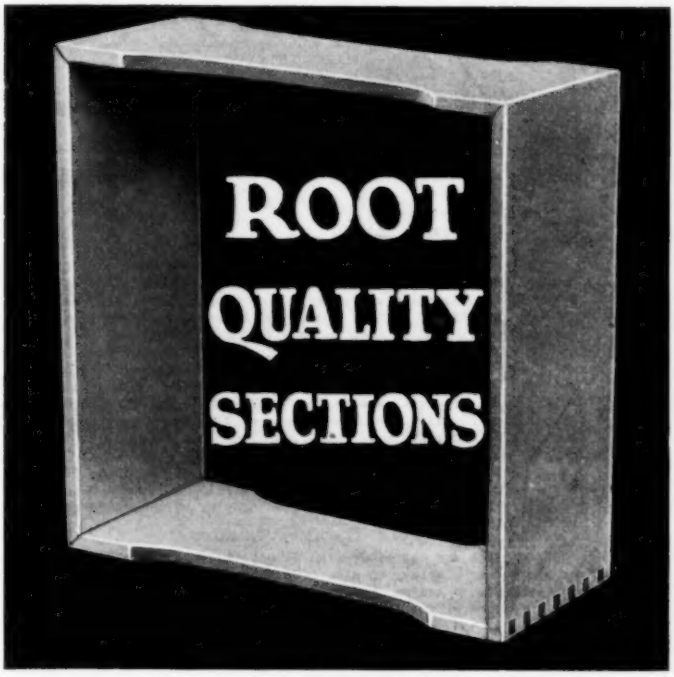
DADANT'S WIRED NON SAG FOUNDATION

Dadant & Sons, Hamilton, Ill.

Makers of Dadant's Famous Foundations
Wired — Plain — Surplus

DADANT'S WIRED NON SAG FOUNDATION

Send 25c in stamps, cash, money order, or check direct to the above address for a trial sheet and frame, and for the name of your nearest dealer.



"Sold by the Million"

No Finer Sections in the World

The A. I. Root Company,
Medina, Ohio.

Please mail me a free copy of your 28-page booklet entitled "How to Produce Comb Honey," with special reference to swarm-control, by Geo. S. Demuth, Editor of Gleanings in Bee Culture.

Name .....

Address .....

THE A. I. ROOT COMPANY, MEDINA, OHIO

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
CHAS. V. TRUAX, DIRECTOR
COLUMBUS

DIVISION OF PLANT INDUSTRY
RICHARD FAHON, CHIEF
C. A. REESE, STATE APIARIST

ADMINISTERS
PLANT PEST LAW
AGRICULTURAL SEED LAW
APIARY INSPECTION LAW

Columbus Ohio,

Jan. 5, 1925.

American Can Company,
Cincinnati Ohio,

Dear Sir; Last August we received from you 100 lithographed honey pails, in three sizes which we used in our display of honey at the last Ohio state fair, to very good advantage, and I hardly feel it fair not to tell you of our success, in as much as these beautiful pails had so much to do with our winning.

I won second prize in individual display of bees and bee products. ($30.00) And Franklin county Association won first prize ($125.00) in competition with five other County or District Bee-keepers Association displays, which was won very largely we were told through our efforts and with these beautiful lithographed pails.

The total amount of prizes offered at the state fair this year for bees and honey alone was nearly $1100.00 and it brought out a wonderful show, said to be the best display of this kind ever seen in the Country anywhere.

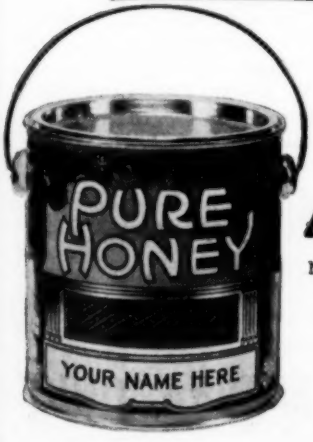
We are certainly glad we got these pails in time to use with our fair display, we also used them at the Franklin County Fair at Hilliards. And we used them many times the past fall in making Grocery store window displays.

These lithographed pails are very nice, but I think are too expensive for general use in selling honey. If you could get the price down somewhat I think they would be more generally used by bee-keepers.

With regards I beg to remain,

Yours truly,

R. D. Hiatt
Deputy state Apiarist.



Unsolicited praise of the Canco stock design lithographed honey pail. This pail will help sell your honey too.

Write for sample and details

American Can Company

NEW YORK CHICAGO SAN FRANCISCO PORTLAND, ORE.